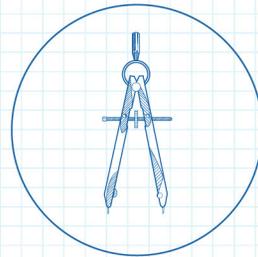


# THE MAKER'S MANUAL



# 2015

---

#MakersManual / #AmericasGreatestMakers

Version 2.0



A

Guide Powered By



# Why Make?

From Shanghai to Seattle, hackers, tinkerers, enthusiasts, self-learners and entrepreneurs of all ages and abilities are applying a 'hands on' approach to constructing the world around them. Leveraging a confluence of digital and analog toolsets, makers are deftly handling both smart styluses and soldering irons to take their concepts from idea to prototype to market reality. What defines the influence, scope and power behind this movement is its optimism in action—the belief in individuals' ability to enact change, and then to do it.

With the power of collective action, social networks and crowdsourcing, individual action is amplified to have extraordinary influence on the larger systems that surround us. It starts at the smallest scale—with one person determined to make something happen—and can grow like wildfire to the extent our imaginations deem possible.

Here are three of the driving forces pushing the Maker Movement forward, from the scale of individuals to systems broken down into the Economic, Societal, and Technological forces at play.

## ECONOMIC FORCES



Individuals are empowered by a growing array of alternative ways to engage in the economy—taking advantage of new services and marketplaces to share, shop, sell and scale.



Communities are championing maker efforts to revitalize urban centers, stimulate small business and provide a competitive advantage to attract even more business.



Government authorities are incentivizing makers to become entrepreneurs, build businesses and usher in new industries that would position their nations favorably within the global economy.

## SOCIETAL FORCES



Curiosity, ideology, necessity: whatever the reason, people are relying more heavily on their own hands and brains to meet daily needs. By experimenting with self-sufficiency, individuals are recognizing their own power through everyday action.



Makerspaces and private/public fab labs are popping up everywhere, allowing communities to teach themselves new skills that could revive local business or traditions in craftsmanship.



Massive person-to-person interactions are changing the landscape of information exchange and political action. Rather than waiting for institutional change, individuals are banding together to initiate social reform.

## TECHNOLOGICAL FORCES



The barriers of access to making have come crashing down, as simplified design tools and cost-effective DIY kits provide individuals with cheap means to make extraordinary projects.



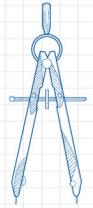
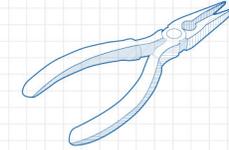
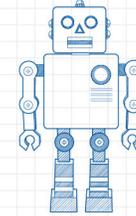
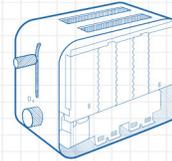
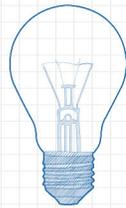
Makers and hackers are pairing indigenous materials, found artifacts or repurposed tools with lab-grade technology to tailor solutions to local community needs.



Knowledge of making, once passed down through specialized guilds, is being digitally codified, documented and shared. The global community of makers radiates outward from these digital networks, transcending both language and geography.

# Whats Next?

As more people take part in the Maker Movement, both the marketplace and culture are poised for some exciting changes ahead. As part of the launch of The Maker's Manual—a publication produced with the support of Intel—the PSFK Labs' team looks at some of the big ideas that fall out of the report and what they'll mean for the consumers and brands.



## INNOVATION IS WHAT MATTERS

Today's consumer marketplace is primed for exciting innovations that change the nature of daily life from work to home to play, meaning any product that captures the public's imagination and delivers on those expectations can become the next big thing overnight. Add to this, a host of new platforms that can reach audiences at various stages in the product development pipeline, and we're seeing the creation of an ideal environment that allows individual makers to not only compete, but succeed against more established companies like never before.

## UNLOCKING THE MEANS OF PRODUCTION

The development of new services that make it possible for makers to tap into professional manufacturing resources has the potential to usher in a more sustainable industrial revolution that can easily scale based on need. As both individuals and larger businesses learn to work within these emerging production frameworks, we'll see new efficiencies in terms of material usage, and shipping and transportation needs. This will also enable a new relationship with the end consumers, promoting greater feedback and transparency, and allowing for unprecedented levels of customization.

## IDEAS GET TANGIBLE

Access to a simple, but sophisticated set of tools and components will allow makers of any skill level to begin to manifest their ideas in the world to solve individual problems and enable inventive experiences. As creativity becomes tangible, it unlocks possibilities that can be seen and touched, helping people relate to each other and their surroundings in entirely new ways. The end result of this more physical method of thinking and communicating ideas has the potential to spur us toward exciting solutions that build on top of one another in a very real way.

## HARDWARE GETS SOFT

As the physical bits of technology—sensors, wires, displays etc.—find their way into the hands of more makers from a wider variety of backgrounds, we'll begin to see the emergence of a new class of hardware that defies current conventions. Whether experimenting with never before imagined forms or designing interfaces that completely redefine people's interactions and relationships with their devices, these creative technologists have the potential to change the entire consumer electronics landscape.

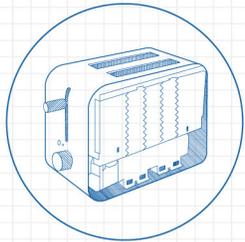
## ELIMINATING OBSOLESCENCE

A shift towards openness and sharing both on and offline is changing what people expect from the companies and brands they buy from. Add to this, an increasing enthusiasm for building and programming skills in work and educational settings, and we'll begin to see a push for end products that meet these emerging desires. The ability to fix, upgrade and personalize out of the box will impact not only hardware and software design, but the experience around those products as well, placing greater importance on the development of services and communities that support long term relationships with these objects.

## MAKING COMMUNITIES

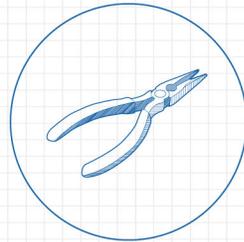
Although makers now have access to more exciting tools and technologies than ever before, the most important asset throughout the process is the ability to tap into other people. The growth of on and offline spaces that enable individuals to share their skills, resources and expertise with the wider community will propel ideas forward and ensure they have the proper support, changing how, where and what products get developed.

## The 5 Types Of Makers



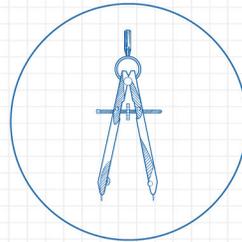
### DIYer

You've probably been told you should 'put it on Kickstarter', and definitely have a history of tinkering, building, and crafting. While you won't necessarily quit your day job, making is a personal passion. You're curious about the new tools out there and interested in expanding on your repertoire or adding a new twist to a familiar skill set.



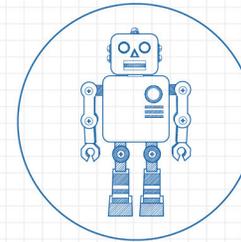
### Self-Learner

'I can probably fix that' might as well be your calling card and your next project is never far from top of mind. Watching how-to videos and swapping tips on your favorite forums is a perfect way to spend an evening. You're never afraid to try out your newest skills, and find yourself most engaged in a hands-on, educational setting. While you may not consider yourself a 'maker' just yet, you've always found value in craftsmanship and feel compelled to understand the emerging digital tools you use everyday



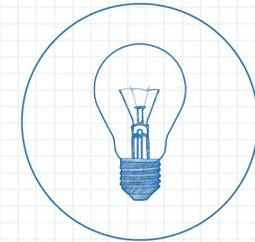
### Educator

People naturally seek you out for advice on the practicalities of advice because you seem to have all the answers, and a story to boot. You have a knack for explaining things and take great pleasure from in helping others and watching both them and their projects grow. You're particularly interested in finding digital resources that can show how subjects like science, math and design can be brought to life in creative applications that make everyday life better (and more fun).



### Pro-Maker

You've got some serious making skills and openly embrace emerging technologies like 3D printers for their ability to add scale and efficiencies to your process. You're equally comfortable operating a table saw or writing a line of code, and are constantly expanding upon the available tools at your disposal. You find yourself pushing past the edges of what's possible, and know multiple failures are an essential part of creating anything worthwhile.



### Entrepreneur

'Can we scale it?' you may ask from time to time because something this great needs to be made available to everyone. You're adept at picking up industry trends and using those insights to inform things you make-all with an eye towards maximizing the bottom line. On your path to building the next big thing, nothing moves quite fast enough so you're always looking for workarounds to get you access to the funding and facilities needed to create a sustainable business, not just a product.

## The 5 Steps Of Making

### Learn It

Master the emerging skill sets of the 21st century by taking advantage of pre-prepared instructional kits, P2P educational resources and collaborative maker spaces.

### Prototype It

Produce a working model of your creation and quickly iterate through multiple versions to fine tune its design, using digital toolsets that take your ideas from the pages of your notebook into the real world.

### Program It

Expand upon the functionality of your prototype by connecting it to the web, creating a dynamic product that interacts with other people, platforms, and things.

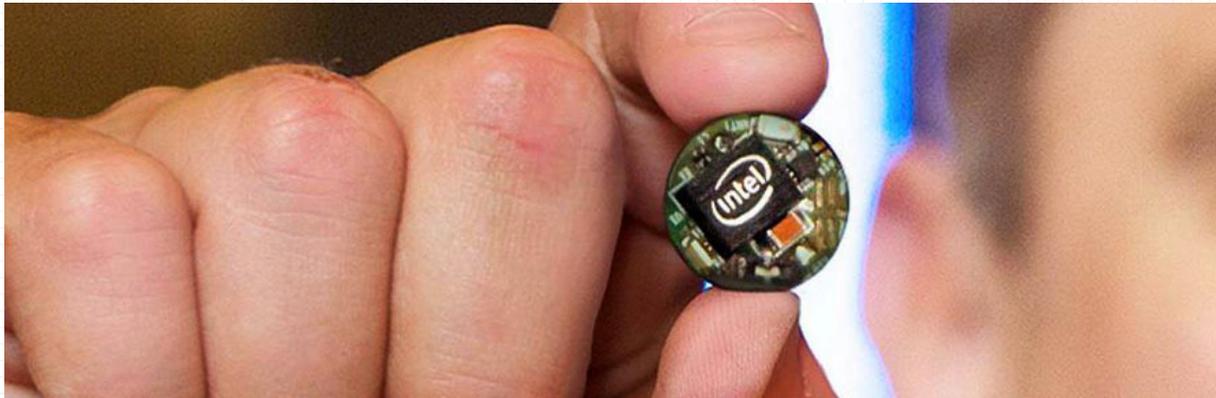
### Scale It

Tap into the right resources from funding to manufacturing to expertise to get your product ready to reach the wider marketplace.

### Sell It

Get your product into the hands of more people by taking advantage of new retail platforms and brand partnerships, and give your creation the spotlight it deserves.

## How Intel Is Empowering The Maker Movement



A spirit of innovation is sweeping the country, from big cities to small towns the Maker culture is everywhere. Makers come in all forms. They're dreamers, inventors, developers, artists and entrepreneurs. What unites the Makers is their do-or-die, energy packed ethos of trying, sharing, learning and creating as they build everything from dog-walking robots to advanced X-ray equipment for hospitals.

At Intel we're excited to support this movement, as making is in our DNA. In 1969, our microprocessor ignited personal computing. A year ago, Intel Galileo and Intel Edison gave Makers the tools they needed to bring their ideas to life and turn anything into a personal computing device. Today, the newly minted Intel [Curie module](#) is the first platform of its kind from Intel—a complete low-power solution the size of a small button boasting a robust feature set that makes it ideal for always-on wearable innovations in almost any form factor imaginable. These technologies—viewed in combination with the fact that open source software and 3D printing are going mainstream—mean that for makers, there has never been less standing in the way of the next big idea.

Think you are ready to build the next truly amazing device? Bring your big ideas to life and compete for a \$1 million grand prize total on Intel's America's Greatest

Makers, a reality TV show airing this spring. Our challenge pits anyone against each other—from workshop geniuses to mad scientists and teenage wunderkinds —to come up with the next big thing in wearable technology and smart connected devices and bring them to market. For your chance to be on it, fill out an application to tell us a little about yourself, your idea, and why you're perfect to be featured on the challenge. Ideas that are centered on small form-factor smart devices that do not require video/camera functionality are preferred, and be sure to check out our '[Submission Do's And Don'ts](#)' on Youtube for more entry suggestions and tips. See the link below for full details on how to participate.

[www.americasgreatestmakers.com](http://www.americasgreatestmakers.com)

Through an ecosystem of hardware, knowledge sharing, support systems and now reality TV, we are working towards supporting Makers and entrepreneurs of all ages to explore and build their dreams and bring them to market. Each system inspires creativity and enables rapid innovation from prototype to production for creators of all ages and skill levels. There's only one question for Intel to ask.

What will you make?

## Editor's Note

We need makers of every type to build our future. As much as we rely on innovation from large corporations, we depend on the ingenuity found on the kitchen tables and in sheds, garages and work studios around the world.

Today, there's a wealth of tools, support and services available for every project size—from the hobbyist's tinkering to the entrepreneur's hack. This manual for makers provides insights into how people can learn, program, prototype and even sell their projects. Together with Intel, PSFK hopes to inspire everyone to pick up kits and connect with like minds to create new ideas and build a better tomorrow.



### PIERS FAWKES

@piers\_fawkes, Editor In Chief,  
PSFK.com, @PSFK, President,  
PSFK Labs, @PSFKLabs

"Today's D.I.Y. Is Tomorrow's  
'Made in America.'"

— President Obama. White House Maker Faire

# TABLE OF CONTENTS

## SECTION 1 DEMOCRATIZED CREATION

Explores how cost-effective and user friendly hardware and tools are allowing a greater number of people to get involved in the maker movement regardless of their knowledge and skill.



**Interactive Building Blocks**  
p. 8-9



**Accessible Design Tools**  
p. 10-11



**Multi-Approach Prototyping**  
p. 12-13



**Intuitive Programming**  
p. 14-15

## SECTION 2 COMMUNITY EXCHANGE

Looks at how a growing number of digital platforms and physical spaces are bringing people together to share essential knowledge and resources and creating new marketplaces for buying and selling their products.



**Skills Incubators**  
p. 18-19



**Collaboration Hubs**  
p. 20-21



**Maker Marketplaces**  
p. 22-23

## SECTION 3 GROWTH SYSTEMS

Surveys a new set of services allowing the maker community to take their projects from personal passions to full-fledged product lines by providing flexible and cost-effective access to financial capital, copyright management tools and manufacturing facilities.



**Elastic Finance**  
p. 26-27



**Gated IP**  
p. 28-29



**Instant Scale Production**  
p. 30-31

## ADDITIONAL RESOURCES



**Maker Shops Get The Parts To Make Your Project**  
p. 16



**DIY Resources Learn The Skills To Make Your Project Better**  
p. 24



**Support Systems Find Assistance To Help Your Project Grow**  
p. 32



**Want To Know More? Follow These Experts**  
p. 33

## SECTION 1

# DEMOCRATIZED CREATION

As the hardware and tools required to start building DIY technology projects become more widely available, cost-effective and user friendly, a greater number of people are getting involved in the maker movement regardless of their knowledge and skill. At the same time, these new resources are spurring longtime inventors to think bigger, enabling them to develop and prototype increasingly sophisticated devices that were previously only being produced by large-scale electronics manufacturers. The net effect is a growing community of hobbyists and entrepreneurs who can start bringing their ideas into the world.

## KEY COMPONENTS

- Interactive Building Blocks
- Accessible Design Tools
- Multi-Approach Prototyping
- Intuitive Programming



TinkerBots

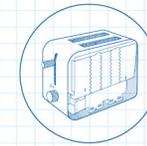
# Interactive Building Blocks

A growing marketplace of circuit boards and sensors is giving makers access to essential building blocks that can be connected and programmed together out of the box to create interactive products. These increasingly powerful but cost-effective electrical components expand the range of objects comprising and experiences driving this emerging class of creative technologies.

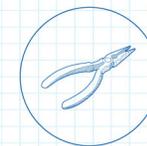


"Over the last several years, we have seen great advancements in what I call the "fabrics of technology" with platforms like Arduino, Raspberry Pi, Galileo, Linux, Android, 3D printing, and even crowdfunding. Prototyping is much easier and faster today, shortening the product development timeline. New hardware products are flourishing because of the speed at which prototypes can be built and iterated."

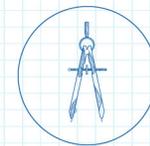
— Liam Casey, Founder, PCH



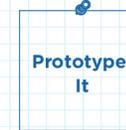
DIYer



Self-Learner



Educator



## How To Use

- **Get Practical**

Take science and design education out of the realms of abstract thinking by getting hands-on with real-world learning applications like interactive building kits from Littlebits.

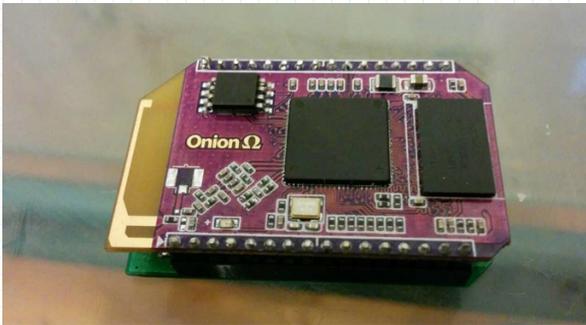
- **Begin Early**

Introduce children and students to the world of making with toy-like hardware kits such as Tinkerbots, which help teach entry-level building and programming skills.

- **Keep It Simple**

Don't know where to start? Try all-in-one building kits that don't require much equipment or knowhow like a set from Metawear.

**BEST IN CLASS EXAMPLES**



**CHIP DESIGNED TO BE A PLATFORM FOR THE INTERNET OF THINGS**

Onion.io has launched a low-cost, high performance hardware development chip, the Onion Omega, to invite invention and rapid prototyping in the IoT space. The Omega is a tiny computer, about 1/4th of the size of a Raspberry Pi, and has wifi and Linux already built into it, to make experimenting as easy as possible. Onion.io aims to roll out a comprehensive set of tools to help developers with limited experience to learn, grow and prototype. Omega developers can harness Onion.io's cloud-hosted tools for free, dubbed Onion Console, to easily build and manage their creations, and use the dedicated Onion app store to find, share and use IoT solutions.

[Onion.io/kickstarter](http://Onion.io/kickstarter)



**SUBSCRIPTION SERVICE SENDS NEW CIRCUITS EVERY MONTH**

Subscription service Tron-Club sends circuit building kits to subscribers' homes, offering makers the opportunity to learn how to build electrical circuits. For a monthly fee of \$14, subscribers receive kits with instructions on how to build over 21 unique circuits. As makers acquire new skills the circuits that are sent become more complex. The knowledge and different electronic parts collected can be applied to robotics, home automation and more.

[tronclub.com](http://tronclub.com)



**CONSTRUCTION TOY SNAPS INTO ANY SHAPE AND IS POWERED BY PROGRAMMABLE 'BRAIN'**

TinkerBots is a modular construction block toy from Kinematics that integrates with other building tools like Lego and includes electronic chips to program the robotic models. Each set relies on a red cube known as a Power Brain that acts as the brain for the toy. It attaches to other modules that bend, twist or sit still, allowing users to create whatever they want by learning to program the Power Brain. Kinematics is also working on rotors that turn TinkerBots into drones, plus sensors that allow them to avoid obstacles or interact with light. The entire system is Arduino compatible, giving users a wide range of flexibility in tinkering with their creations.

[tinkerbots.net](http://tinkerbots.net)  
[bit.ly/1mwv02](http://bit.ly/1mwv02)

**OTHER PROJECTS TO CHECK OUT**



**littleBits**

Toy-like Modular Electronics Set Adds Arduino For Easy Programming

[littlebits.cc/new\\_home](http://littlebits.cc/new_home)  
[bit.ly/1rl2pMn](http://bit.ly/1rl2pMn)



**Spark**

Connects Hardware Of Everyday Objects To Cloud Software Through Wi-Fi

[spark.io](http://spark.io)



**Printoo**

3D Printed Electronics Connect Any Device To The Internet Of Things

[ynvisible.com/printoo](http://ynvisible.com/printoo)  
[bit.ly/1rNkk4b](http://bit.ly/1rNkk4b)

**EXPERT THINKING**

"It's such a hot space. Particle, Intel, Arduino, Raspberry Pi. These controllers have become such an important part of the hardware ecosystem by allowing people to create a prototype in minutes they can then connect to the cloud. It's now easier and easier for makers and entrepreneurs to create interesting products."

— Kate Drane, Senior Director, Indiegogo

"It's still early, but the potential impact is huge. We're seeing littleBits used widely by makers, but also by people outside of the Maker Movement. People want a way to feel creative with electronics."

— Ayah Bdeir, Founder, littlebits

"Adding electronic "smarts" and simple automation adds a new and compelling level to a projects' interactivity and intelligence. This allows anyone to explore and leverage the possibilities of IOT."

— Carrie Motamedi, VP Marketing, TechShop

"Interactive building blocks will make it easier to develop all kinds of interactive products. It will be good to free minds and show that you don't need to be a billion dollar company to make a proof of concept or even a product to be sold."

— Borre Akkersdijk, Designer / Inventor, BYBORRE



Gravity

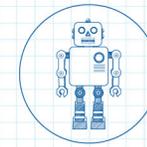
# Accessible Design Tools

Simplified design tools are helping makers take their ideas from 2D concepts and sketches into digital 3D models that can be readied for the production pipeline. Through a combination of intuitive interfaces and seamless analog to digital transfer these tools make it easier for makers to visualize and refine their creations prior to reaching the prototyping or manufacturing stages.

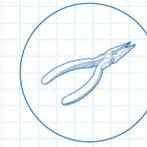


*"Everyone has a creative vision, but not everyone has been able to express their visions in years passed due to a lack of design tools knowledge. Now, we will start to see more unique creative visions than ever before."*

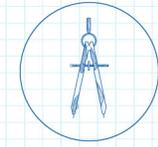
— Mick Ebeling, Founder, Not Impossible Labs



Pro-Maker



Self-Learner



Educator



Prototype It



Program It

## How To Use

- **Rapid Iteration**

Take advantage of visualization tools like Morphi that make it easy to create and refine multiple working versions of a prototype to ensure your designs are just right.

- **Capture It Digitally**

Add an emerging software platform like Rendor to your toolbox, making it easy to transfer analog sketches into digital formats for quicker testing and collaboration.

- **Sketch In Three Dimensions**

Use a handheld 3D printing tool like Lix to instantly turn your ideas into physical objects, bringing a more fluid, freestyle method into the creative process.

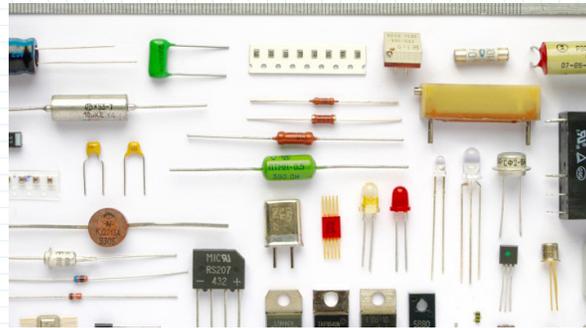
**BEST IN CLASS EXAMPLES**



**SENSOR EQUIPPED BLOCKS INSTANTLY TRANSLATE INTO 3D DIGITAL DESIGNS**

Prototyping-protagonist studio Gravity has released their Lego X system, allowing designers to use physical building blocks to build a model that automatically is translated into a 3D model within the Lego X app. Each block is equipped with sensors on all sides, tracking location, orientation and position in real-time, to recreate the design in 3D. When multiple blocks are put together they become an entity and can be altered from within the design interface adding design features and smoothing out corners and lines. The design can be directly exported to a 3D printer from within the interface for fast prototyping.

[bit.ly/17VwROB](http://bit.ly/17VwROB)



**PARTNERSHIP CREATES SCHEMATIC LIBRARY FOR DESIGNING CONNECTED PRODUCTS**

Design data provider SnapEDA and Octopart's Common Parts Library teamed up to help makers more easily find and understand components for IoT and wearable devices. The Common Parts Library contains around 300 parts such as wifi modules, amps, timers, and voltage regulators. The partnership with SnapEDA provides schematic symbols and printed circuit board footprints for the components. By creating a ready to use design library, SnapEDA encourages tinkering, facilitates component selection, and expedites development cycles for hobbyists and professionals alike.

[bit.ly/1QaXsYL](http://bit.ly/1QaXsYL)



**PEN MAKES 3D MODELLING AS EASY AS DRAWING**

The 3Doodler is a pen that extrudes a heated plastic filament that instantly cools and hardens allowing artists, makers, and tinkerers to create multi-dimensional drawings and solid, stable structures. Marketed to both adults and children, the 3Doodler can create anything from simple structures to complex architectural forms. The pen has recently made its way into classrooms across the US, enabling educators to use the pen as tool to encourage creativity and engagement in art, math, and science.

[the3doodler.com](http://the3doodler.com)

**OTHER PROJECTS TO CHECK OUT**



**Gravity**

3D Sketchpad Lets You Draw Objects In Midair

[gravitysketch.com](http://gravitysketch.com)  
[bit.ly/1nYHZHl](http://bit.ly/1nYHZHl)



**Morphi**

Design Tool Interface Encourages Rapid Learning For Adaptive Printing

[bit.ly/1lNNbFZ](http://bit.ly/1lNNbFZ)  
[bit.ly/1qu7CY3](http://bit.ly/1qu7CY3)



**Render**

Printable Grid Helps Turn Photo Capture Into 3D Scan

[render.co](http://render.co)  
[bit.ly/1n7mWpk](http://bit.ly/1n7mWpk)

**EXPERT THINKING**

"Tools and software that not only simplify design but allow makers to explore variations, test functionality and improve modeling, will enable cost effective and thoughtful design, i.e. frugal innovation."

— Carrie Motamedi. VP Marketing. TechShop

"Access to software is what distinguishes professional from amateur work in most fields, now, and democratization of professional-grade tools means that amateurs are producing more and better work."

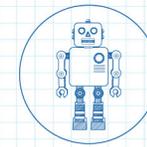
— Sean Michael Ragan. Co-Founder, Editorial Director. Foundry

"The better the tools—and number of people that can use them—the more boundaries you can push."

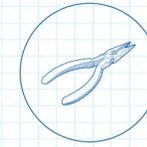
— Borre Akkersdijk. Designer / Inventor. BYBORRE.

"Just as the publishing, music recording, and film industry has been transformed by low cost, accessible software tools, so too is product design being disrupted by tools that allow anyone to transform simple sketches into complex physical objects."

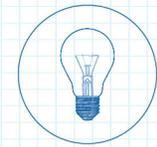
— Adam Jordan. Senior User Experience Design and Development. Intel



Pro-Maker



Self-Learner



Entrepreneur



Prototype It



Program It



Scale It

## How To Use

- **Test It Early And Often**

Integrate intuitive prototyping tools and programs into your process to start building working models of your products from the start to test and refine your final designs ahead of important pitches and business meetings.

- **Desktop Fabrication**

Invest in one of the many affordable 3D printer on the market to enable you to quickly build multiple prototype designs, allowing you to experiment with critical functions or aesthetic decisions anytime inspirations strikes you.

- **Digital Assistance**

Tap into sophisticated algorithms to explore a wider variety of options for your product design before making a decision on the best pathways to pursue, refining your approach along the way.

# Multi-Approach Prototyping

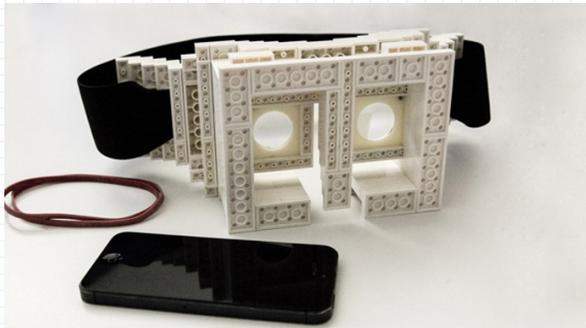
Makers are leveraging sophisticated printing technologies and interfaces to help them overcome the challenges of taking a new concept from the prototype to manufacturing stage. These tools give makers the ability to efficiently test and refine their designs over multiple iterations to ensure that the final product effectively meets the needs of its end users.



**"The ability to design, test and run models for various materials and components/features opens up a new world for creatives and makers to propose a wider variety of solutions."**

— Carrie Motamedi, VP Marketing, TechShop

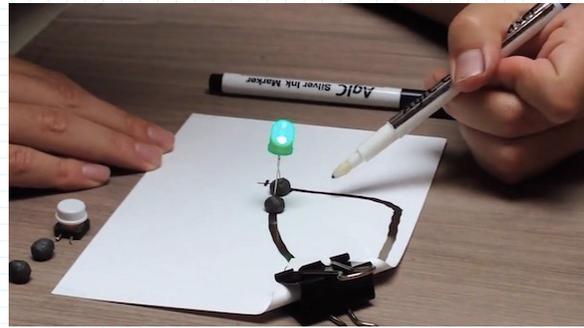
**BEST IN CLASS EXAMPLES**



**RAPID PROTOTYPING SYSTEM MIXES 3D PRINTING AND LEGO**

FaBrickation is a research project by the Human-Computer Interaction group at the Hasso Plattner Institut in Germany. The fast prototyping system aims to save 3D printing time by replacing smaller parts with Lego bricks. FaBrickation is a new approach to rapid prototyping of functional objects, such as the body of a head-mounted display. Users can mark the lens mounts as "high-resolution" to indicate that these should be 3D printed at a later time and instructions are generated for creating everything else from Lego bricks. If users update the design later, FaBrickator allows the re-printing of only the elements that changed. On average, the system fabricates objects 2.44 times faster than traditional 3D printing, and requires just 14 minutes of manual assembly.

[stefaniemueller.org/fabrickation](http://stefaniemueller.org/fabrickation)  
[bit.ly/TjgHqF](http://bit.ly/TjgHqF)



**PENS DRAW AND EDIT FUNCTIONAL CIRCUITS**

Printable circuit startup AgIC created the Erasable Circuit Maker which enables children, artists, and engineers alike to quickly bring their electronic ideas to life. AgIC, which stands for Silver Ink Circuit, uses a silver ink to create conductive ink for inkjet printers. The Erasable Circuit Maker packages this ink in pen form letting anyone who can draw, experiment and create simple circuits regardless of whether they are possessing of limited technical knowledge. The eraser pen is a unique addition that distills and loosens the silver ink allowing users to rub away any mistakes if drawn on the required glossy photo paper. Projects featured on the site use conductive ink to create anything from greeting cards to posters to interactive advertisements.

[psfk.com/?p=258071](http://psfk.com/?p=258071)

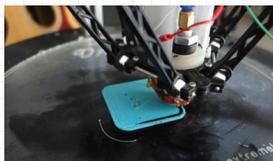


**SERVICE WILL 3D PRINT PROTOTYPES WITH SAME DAY DELIVERY**

Fictiv is a platform for prototyping hardware using idle 3D printers from service bureaus, startups, and individuals. Hackers, creators, startups, design firms, and individuals can harness the rapid prototyping capabilities of 3D printing for those without printers. The peer-to-peer model opens access to both hobbyist and industrial level machines. The breadth of machines available lets users choose those that are specific to their needs. After creating an account, customers upload their part file and receive a free quote. Vendors then review and agree to make the part. The service is open to residents in the San Francisco Bay Area and promises delivery under 24 hours

[fictiv.com](http://fictiv.com)

**OTHER PROJECTS TO CHECK OUT**



**Rabbit Proto**

Open Source 3D Printer  
 Integrates Circuitry Seamlessly  
[rabbitproto.com](http://rabbitproto.com)



**Makerbot**

3D Printer Seamlessly Switches  
 Build Materials Mid-Print  
[makerbot.com](http://makerbot.com)  
[bit.ly/1qAA6CR](http://bit.ly/1qAA6CR)



**AIO Robotics' Zeus**

Consumer 3D Printer & Scanner  
 Also "Faxes" Objects to Other  
 Printers  
[zeus.aiorobotics.com](http://zeus.aiorobotics.com)  
[bit.ly/1mDazop](http://bit.ly/1mDazop)

**EXPERT THINKING**

"Making it easier to visualize before any physical prototyping is even started is amazing."

— Kate Drane, Senior Director, Indiegogo.

"With prototype creation becoming easier, inventions will start to be released at a turbo speed."

— Mick Ebeling, Founder, Not Impossible Labs.

"Today, it's easier than ever to prototype your brilliant napkin sketch, make a compelling crowdfunding video, and pre-sell thousands of units. However, manufacturing is still a complicated dance that often confounds the best funded startups."

— David Endler, Founder, Foundry.

"The greater accessibility to prototyping tools will provides makers with more options to start, build and iterate new projects."

— Yuki Nishida, CEO and Chief Engineer, AgIC International Corporation.



MESH Tags

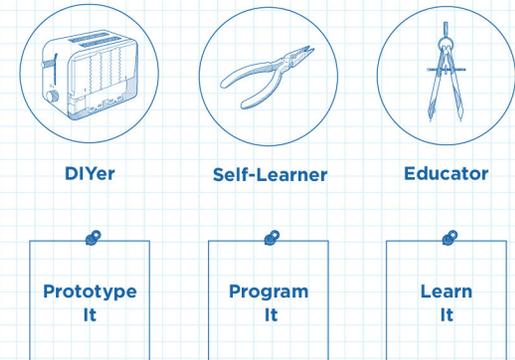
# Intuitive Programming

Even without formal programming skills, makers are taking advantage of new software tools and interfaces to connect their products to the internet and begin experimenting with various types of interactive experiences. Whether by simplifying coding languages or creating 'good enough' shortcuts, these systems are helping makers improve the features and functionality of their products to widen their appeal.



"The line between physical and virtual projects is blurring, creating endless opportunities for makers. We've seen a small preview of what's to come as new products are continuously created to improve on those that already exist. In the next year or two, I think we'll see new classes of products better serving the needs and wants of consumers as they connect to the internet in some manner, whether through apps or physical connections."

— Einaras Gravrock, CEO, CUJO



## How To Use

- **Out Of The Box Sophistication**

Make your projects highly interactive with the assistance of simplified software platforms like IFTTT, which give a whole new meaning to 'Basic Programming.'

- **Power Of Community Access**

Borrow from the opensource coding platforms like GitHub to create an initial framework for building out your own designs and give back by sharing your own efforts to help further the ideas of others.

- **From Amateur To Engineer**

Take advantage of simple programming tutorials and resources to expand your skills, enabling you to tackle increasingly complex tasks.

**BEST IN CLASS EXAMPLES**



**DRAG AND DROP INTERFACE CREATES EASY DEVICE CONNECTIONS**

MESH is a creative DIY platform that makes it fast and easy for people to create their own connected smart projects. Created by Sony's Seed Acceleration Program, the platform works with a visual design app called Canvas and wireless functional modules dubbed MESH Tags. To connect two MESH Tags, users simply have to create the connection on the Canvas visual design app, which works on an iPad, by dragging the icons for the Tags and then drawing a line between them to connect. Sample smart projects presented by the creators include a trash can that says 'Thank You' every time someone throws trash in it, an automatic watering machine, and an automatic closet light. Users don't need to know any coding in creating their smart projects since Canvas has a drag-and-drop interface.

[bit.ly/1Boy8WE](http://bit.ly/1Boy8WE)



**PLATFORM LETS CREATORS DESIGN AND STREAM FLASH GAMES WITHOUT CODE**

Stencyl is a platform that allows makers to create Flash and mobile games for iOS without having to learn a programming language. Featuring an intuitive drag-and-drop toolset, the platform accelerates workflow and allows users to customize their games. More experienced coders have the ability to create and share their own blocks, extend the engine through code, import libraries and write their own custom classes that interact seamlessly with block-based behaviors. Once created, users can publish their games to commercial markets such as Flash portals, the App Store & Google Play.

[stencyl.co](http://stencyl.co)



**FRIENDSHIP BRACELETS TEACH USERS TO CODE**

Jewelbots is a series of communicative bracelets geared towards teenage girls which teach wearers how to code. The bands look like typical friendship bracelets, however the flower adornments contain tiny circuit boards. The bracelets link via Bluetooth to an app, which immediately allows users to program the bracelets with simple if-then statements. They can program the flowers to glow when friends are nearby or vibrate and flash to send messages in Morse code. The bracelets communicate with each other in a mesh network, which doesn't require cell phones or wifi to work. As girls become more used to programming, they can also connect their bracelets to their computers. Using Arduino software, they can customize the bracelets to do just about anything, from pulse when they get a Facebook notification to flash blue if it's about to rain.

[jewelbots.com](http://jewelbots.com)

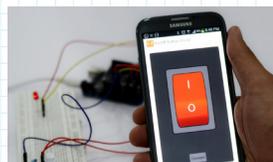
**OTHER PROJECTS TO CHECK OUT**



**Avocado**

Toolbox For Interaction Designers Requires No Coding

[bit.ly/1h8PPoU](http://bit.ly/1h8PPoU)



**1Sheeld**

Project Brings Arduino Prototyping To The Android Phone

[1sheeld.com](http://1sheeld.com)  
[bit.ly/Tf6HyV](http://bit.ly/Tf6HyV)



**Marvel**

Interactive Prototyping Tool Digitizes Sketches For Further Iteration

[marvelapp.com](http://marvelapp.com)

**EXPERT THINKING**

"Whether it is smart jewelry, a new kind of coffee maker or a cooking robot, each device is brought to life on an internet connected platform which offers richer functionality and monetization opportunities. IFTTT is a great example of a simple web interface that allows a startup to add rudimentary internet functionality to an early prototype and receive feedback from trial users on the basic product concept."

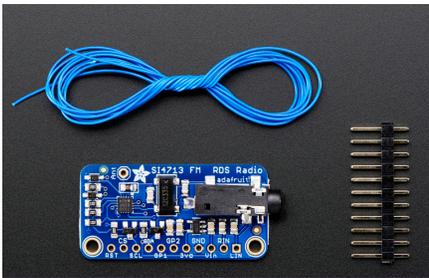
— Liam Casey. Founder. PCH

"To me this space is still an unknown quantity. It's exciting that the digital and physical spaces are finally merging, however it still feels most projects are either novelty or hedonistic. In the world of education however, this is an incredible and exciting space to help students use technology in much more powerful, meaningful and useful ways across curriculum."

— Bethany Koby. CEO and Co-Founder. Tech Will Save Us.

# Maker Shops—Get The Parts To Make Your Project.

Demystify your interactions with hardware and software by taking advantage of the easy to follow instructional kits, products and educational resources provided by the shops below:



## Adafruit

Adafruit provides a curated shop for tools, equipment and electronics for Makers of all ages and skill levels.

[adafruit.com](http://adafruit.com)



## Inventables

Inventables' "Designers Hardware Store" sells materials in small shapes and sizes for desktop fabrication to help streamline the process of local manufacturing.

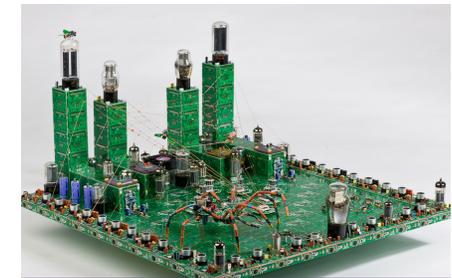
[inventables.com](http://inventables.com)



## Technology Will Save Us

Tech Will Save Us provides DIY kits which include real components and electronics that bring people closer to technology through doing.

[techwillsaveus.com](http://techwillsaveus.com)



## Seed Studio

Seed's Bazaar offers a Maker-exclusive online marketplace where people can purchase hardware with the support of global logistics and supply chain proficiency.

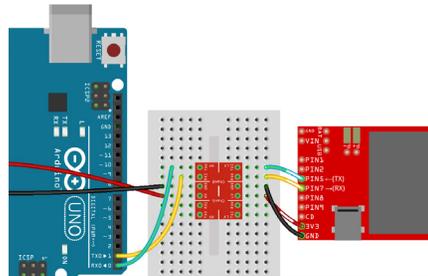
[seedstudio.com/depot](http://seedstudio.com/depot)



## littleBits

Littlebits sells an opensource library of electronic modules that snap together with tiny magnets for prototyping, learning and fun.

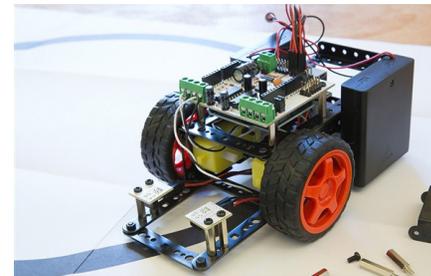
[littlebits.cc](http://littlebits.cc)



## Sparkfun

Sparksfun is an electronics retailer that manufactures and sells microcontroller development boards and breakout boards.

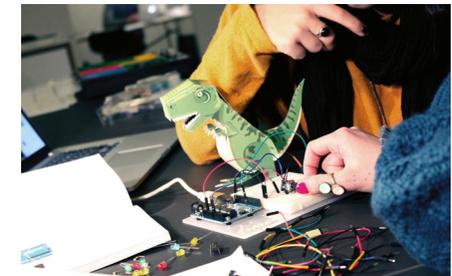
[sparkfun.com](http://sparkfun.com)



## Makershed

Makershed is the official store of Make Magazine offering a curated collection of books, kits, robots, microcontrollers, science sets, electronics, tools and supplies.

[makershed.com](http://makershed.com)



## Fritzing

The Fritzing Creator Kit offers some playful first steps into the world of interactive electronics with Arduino and hands on projects.

[shop.fritzing.org/en](http://shop.fritzing.org/en)

## SECTION 2

# COMMUNITY EXCHANGE

A growing number of digital platforms and physical spaces are helping to cultivate the Maker Movement by bringing people together to share essential knowledge and resources and create new marketplaces for buying and selling their products. At their core these ventures recognize the inherent value of community, leveraging the collective strengths of individuals to expand access, education, collaboration and exchange.

### KEY COMPONENTS

- Skills Incubator
- Collaboration Hubs
- Maker Marketplaces



Etsy's Craft Entrepreneurship

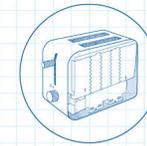
# Skills Incubators

Makers of all levels are taking advantage of niche educational programs aimed at teaching key skills and entrepreneurial insights at various phases of a product development cycle. Whether offering one-on-one assistance to help amateurs get started on new projects or providing valuable business insights for those preparing to bring their product to market these alternative classrooms are expanding the knowledge of the maker community.



**"More and more incubators are popping up, and it's easy to see the appeal. Having a support network at your disposal, whose objective is to ensure you are successful, is quite an appealing value proposition for upcoming entrepreneurs who are looking to learn and be around peers."**

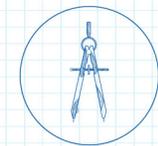
— Kate Drane, Senior Director, Indiegogo.



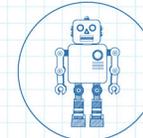
DIYer



Self-Learner



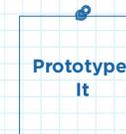
Educator



Pro-Maker



Learn It



Prototype It



Program It



Sell It

## How To Use

- **Pick The Perfect Style**

Choose from a range of alternative education programs from online tutorials to intensive boot camps that suit a variety of learning styles and budgets to find the right fit for you.

- **Don't Quit Your Day Job**

Pick courses and tutorials that support after work hours and at home lessons to give yourself the time to firm up your skills before taking a professional leap.

- **Tap The Crowd**

Supplement traditional classroom learning with peer-to-peer forums and skillshares, which allow anyone to share useful knowledge with the community.

**BEST IN CLASS EXAMPLES**



**COMMUNITY PLATFORM LETS MAKERS MONETIZE THEIR HOW-TO GUIDES**

AspiredSteps is a mobile application that allows individuals to post DIY projects and receive a commission when others purchase the materials required to complete the project. Users begin by posting their DIY projects accompanied by step-by-step instructions for the community to follow. Makers can then add the project's required materials, which can be purchased by the community directly through the app. After materials are purchased, makers are notified and receive a cut of the profits. By creating a direct line to purchasing the correct materials, the application is saving DIY enthusiasts time and providing an additional source of revenue for creators.

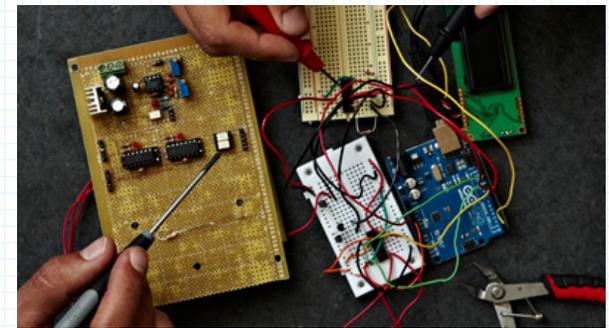
[aspiredsteps.com](http://aspiredsteps.com)



**ALTERNATIVE UNIVERSITY OFFERS CURRICULUM AIMED AT MAKING**

Make School is a learning initiative offering up a diverse education in somewhat untraditional skills such as creativity, prototyping, and coding. Based in San Francisco, the 2 year college level program boasts an impressive list of Silicon Valley professionals as contributors and aims to launch students into a professional life of tech. Following their mantra of "learning by doing", students are focused on creating, building, launching and shipping software solutions for a diverse set of issues.

[makeschool.com](http://makeschool.com)



**MAKER CLASSES TEACH ENTREPRENEURS HOW TO PROTOTYPE, MARKET AND SCALE PRODUCTS**

Highway1 is a hardware startup accelerator that connects promising young businesses with the tools they need to scale and deliver solutions for businesses. Their hands-on educational programs help entrepreneurs learn to do research, iterate messaging, and practice pitching from a faculty of successful engineers and mentors. Access to prototyping facilities as well as PCH's manufacturing plant in Shenzhen, China give entrepreneurs the opportunity to develop prototypes at scale as well as connections to expert engineers and manufacturers.

[highway1.io](http://highway1.io)

**OTHER PROJECTS TO CHECK OUT**



**Creative Startups**

Startup School Teaches Needed Expertise And Mentorship

[schoolforcreativestartups.com](http://schoolforcreativestartups.com)  
[ind.pn/1qv09KJ](https://ind.pn/1qv09KJ)



**Tech Will Save Us**

Educational Startup Empowers Consumers To Become Creators

[techwillsaveus.com](http://techwillsaveus.com)



**Udeity**

Learning Marketplace Lets Individuals Buy And Sell Courses, Grows Internationally

[udeity.com](http://udeity.com)  
[bit.ly/1hzSrWU](https://bit.ly/1hzSrWU)

**EXPERT THINKING**

"People learn best about technology by tearing it apart and getting their hands on and in it. I'm not sure if the peer-to-peer setting is essential, but having dedicated space, time, and equipment for people to tear stuff apart, hack on it, and remake it into other stuff is very important."

— Sean Michael Ragan. Co-Founder, Editorial Director. Foundry.

"Hardware startups are hard compared to software. Startups face unique barriers to design, manufacturing, distribution and retail. We created the Highway1 program to offer a collaborative, hands-on environment to help startups move through these challenges and reach a looks like, works like prototype ready for manufacturing."

— Liam Casey. Founder. PCH



BetaBox

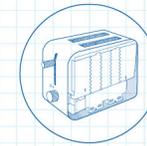
# Collaboration Hubs

Even if you don't have the space or budget to build a 'maker' studio of your own, community workshops are stepping in to provide centralized access to all the resources and support you need for any style project. While these spaces come outfitted with an array of pro tools and machinery, their real strength lies in the collective know-how of their members. Find a collaborator for your latest project or seek an expert's advice on new design techniques to begin transforming your idea into something real.



**"The belief that "innovation happens elsewhere" is the foundation for collaborative and community learning. We learn by doing and innovate by sharing."**

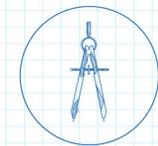
— Carrie Motamedi, VP Marketing, TechShop.



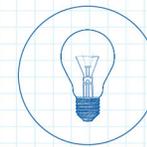
DIYer



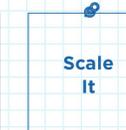
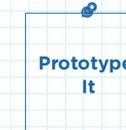
Self-Learner



Educator



Entrepreneur



## How To Use

- **Flexible Access**

Become a member of a makerspace like the Columbus Idea Foundry in Ohio, which provides the space and tools to build both beginner and expert level projects.

- **Distributed Ownership**

Share physical and digital tools with a local community at spaces like Techshop to get access to the necessary resources, while lowering the up front costs of making.

- **Pop-Up Communities**

Consider developing a mobile skill space like Frysklab to make the physical tools and maker know-how available to a wider community who might not otherwise have access, helping expand the movement to more people and places.

**BEST IN CLASS EXAMPLES**



**MAKER STUDIO OFFERS HANDS-ON LEARNING INSIDE FULLY EQUIPPED WORKSHOP**

Craftsman Ave is a 1500-square foot creative skill space in Brooklyn, NY, where makers can learn hands-on skills taught by local artists and designers. The school offers a wide array of classes on everything from jewelry making and woodworking to perfume blending and custom motorcycle design. One day workshops cost between \$60-\$120, with students taking home a finished product at the end of the day. Craftsman Ave hopes to grow and create a network of maker studios in cities around the country that can help both novice and more serious makers bring their visions to life.

[craftsmanave.com](http://craftsmanave.com)



**HARDWARE ENTREPRENEURIAL COMMUNITY CONNECTS MAKERS TO TOOLS AND SERVICES**

Foundry exists to help hardware entrepreneurs design, build and sell products by connecting them to the tools and services they need to mass-produce goods and grow companies. Past successes include Ringly, a jewelry item to surreptitiously check smartphone notifications and DipJar, an electronic tip jar for credit cards. Startups that work with them gain access to a professional network of inventors, industrial designers, engineers, manufacturers, marketers and business experts that can help guide them as they launch their businesses.

[foundry.net](http://foundry.net)



**CONVERTIBLE SHIPPING CONTAINERS SERVE AS PORTABLE PROTOTYPING LABS**

BetaBox manufactures, rents and sells mobile prototyping labs fitted with 3D printers, laser cutters, scanners and other design equipment available to creators who collaborate and innovate in them. The self-contained portable hubs are available to universities, colleges and businesses to rent and customize to host classes, events, conferences and community outreach projects. Betabox offers a place for students and working professionals to learn how to code, prototype hardware and use design thinking to solve problems. The rental fees include a facilitator who can assist students with projects and teach workshops if needed.

[betabox.org](http://betabox.org)

**OTHER PROJECTS TO CHECK OUT**



**Columbus Idea Foundry**

Makerspace Rents Out Workshops And Tools To Prospective Tinkerers

[columbusideafoundry.com](http://columbusideafoundry.com)  
[bit.ly/1rCNoPD](http://bit.ly/1rCNoPD)



**Fab Lab Tulsa**

Mobile Fab Lab Tulsa Is A Game-Changer For STEM Education

[bit.ly/1rPX4Tp](http://bit.ly/1rPX4Tp)



**TechShop**

Dedicated Makerspaces Help Bring Inspiration To Larger Brands

[techshop.ws](http://techshop.ws)  
[bit.ly/UVzMkl](http://bit.ly/UVzMkl)  
[n.pr/Sc8yL](http://n.pr/Sc8yL)

**EXPERT THINKING**

"When you start a business, you are responsible for so much, and as you start to grow, people depend on you to make the right decisions. For first time entrepreneurs, incubators are a great bet to help you ramp quickly."

— Kate Drane. Senior Director. Indiegogo.

"Making tools publicly available to encourage innovation could provide greater dividends to the investors than any other investment available."

— Mick Ebeling. Founder. Not Impossible Labs.

"To me this is akin to the way we viewed personal computers. If you remember, at first it was a hobbyist thing, which [3-D printing] definitely is right now. Then eventually there was desktop publishing, which is now so familiar no one even calls it that anymore."

— John Christensen. Chicago Tribune. July 2013



Amazon Launchpad

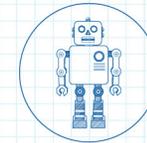
# Maker Marketplaces

Makers now have access to an expanded range of retail platforms and services that enable them to market and sell their creations to larger audiences. A combination of independent and brand-led marketplaces are simplifying the process of how and where these products reach consumers, helping makers compete alongside traditional companies.

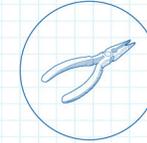


**"As more and more startups bring products onto the scene, it will become increasingly important for retailers to develop processes for integrating these new technologies."**

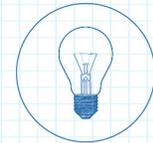
— Kate Drane, Senior Director, Indiegogo.



Pro-Maker



Self-Learner



Entrepreneur



Scale  
It



Sell  
It

## How To Use

- **Tell Your Story**

Differentiate your product from the competition by introducing your audience to the people and processes behind it, creating emotional connections, not just transactions.

- **More Than Sales Solutions**

Sell through specialized marketplaces like Brit & Co. to get your product in front of consumers, but get even more value by tapping into curated information resources and building relationships with the wider community.

- **Beta Testing**

Put your product out in the hands of niche communities at an early stage to solicit critical feedback and open the door to potential collaborators or partnership opportunities.

**BEST IN CLASS EXAMPLES**



**E-COMMERCE GIANT CREATES SPECIAL MARKETPLACE FOR STARTUP PRODUCT SELLERS**

Amazon Launchpad is a program started by online retail giant Amazon to help young companies with sales and distribution. Launchpad will handle all the logistical steps that come with selling physical goods including storing inventory, shipping, marketing, returns and customer service. Currently only available in the U.S., Launchpad promises independent companies extra marketing power, better landing pages and a global distribution network that these smaller vendors would otherwise be unable to access or afford.

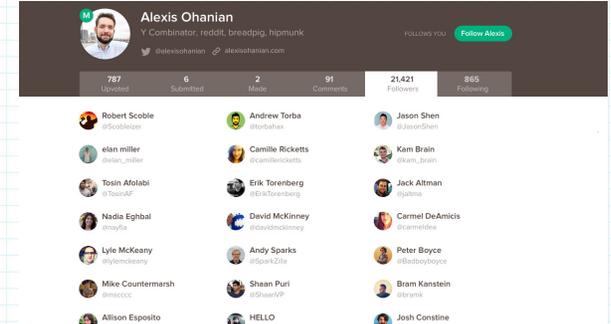
[cnnmon.ie/1NPjXEi](http://cnnmon.ie/1NPjXEi)



**NEW PLATFORM AIMS TO BE LINKEDIN FOR THE MAKER COMMUNITY**

Makerbase is an online database intended as an alternative to plain-text résumé sites like LinkedIn. Makerbase is for people who make digital products, from coders and designers to writers and businesspeople. The index is useful for makers who want a place to list all the gigs and projects they have worked on, and the site offers a list of who did what on a project in a manner similar to IMDB, the internet movie database. The site is searchable to shed light on who created specific projects, who collaborated and who played which roles.

[makerba.se](http://makerba.se)



**PRODUCT DISCOVERY SITE LETS COMMUNITY ENGAGE MAKERS AND FOUNDERS**

Product Hunt is an online platform where community members can discover and rate games, books, and products they like by upvoting their favorites. The platform's LIVE channel invites prominent entrepreneurs, makers and authors to come to the site and answer "Ask Me Anything"-style questions. Whether it's on the day of their product launch or simply to engage with the community, makers converse via the Product Hunt channel to answer questions about their products, solicit feedback and tell their story, increasing the interaction between those who make a product and those who use it.

[producthunt.com/live](http://producthunt.com/live)

**OTHER PROJECTS TO CHECK OUT**



**RadioShack**

Big Box Retailer Helps Hardware Startups Reach Store Floor

[radioshack.com](http://radioshack.com)  
[bit.ly/1pmcT2v](http://bit.ly/1pmcT2v)



**Brit + Co.**

DIY Content Platform Fuses Maker Stories with E-commerce

[brit.co](http://brit.co)  
[bit.ly/1pRgeKw](http://bit.ly/1pRgeKw)



**MoMA**

Museum Design Store Presents Kickstarter-Funded Products

[bit.ly/1pPOV0f](http://bit.ly/1pPOV0f)  
[bit.ly/1jfvIKM](http://bit.ly/1jfvIKM)

**EXPERT THINKING**

"Including consumers in the process of a new products/markets allows for failing fast, reiterating and mass customization. Winning hearts and minds has to be built into your product cycle before launch."

— Carrie Motamedi. VP Marketing. TechShop.

"The direct to consumer trend will allow more small businesses and innovators to succeed. By cutting out the middleman, innovative projects are able to retain more profit and better fund future projects."

— Mick Ebeling. Founder. Not Impossible Labs.

"Consumers are definitely responding to products when they know the story about who made them or how they were created. It's a story that can be passed along to their friends once they own the product and acts as validation that they did their research and respect well-crafted goods."

— Brit Morin. CEO. Brit + Co.

# DIY Resources—Learn The Skills To Make Your Project Better.

Hack it, program it, and learn more about your subject area or just find a new project to delve into with the help of these community-fueled resources:



## Instructables

Instructables is an online resource that allows anyone to explore, document, and share their creations alongside easy-to-follow instructions. [instructables.com](http://instructables.com)



## iFixit

iFixit is a global community of people helping each other repair things they own by uploading 'how to' manuals on solutions. [ifixit.com](http://ifixit.com)



## Make Zine

From hobbyists or professionals, Maker Media serves a growing community of makers who bring a DIY mindset to technology. [makezine.com](http://makezine.com)



## Hack a Day

Hackaday serves up new hacking projects collected from around the Internet each day which are geared towards engineering enthusiasts. [hackaday.com](http://hackaday.com)



## Hack N Mod

HacknMod offers users hundreds of tutorials, guides, and even step-by-step video lessons to learn to hack and modify common (even retro) game consoles such as the Xbox 360 and Wii. [hacknmod.com](http://hacknmod.com)



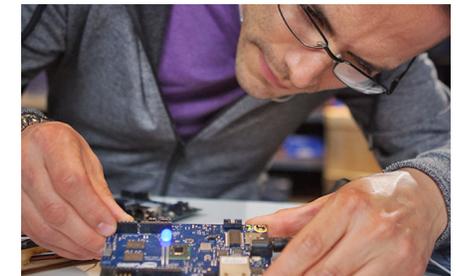
## Dangerous Prototypes

Dangerous Prototypes provides open source hardware projects every month which are available for purchase through platforms like Seed Studio and other distributors. [dangerousprototypes.com](http://dangerousprototypes.com)



## HackedGadgets

HackedGadgets is a platform offering tutorials on how to tweak and improve the products you already own. [hackedgadgets.com](http://hackedgadgets.com)



## Intel Maker Community

A comprehensive resource providing support at all stages of the process of 'Making', including academic links, project tutorials, and forums on a variety of types of projects, including proprietary hardware. [communities.intel.com/community/makers](http://communities.intel.com/community/makers)

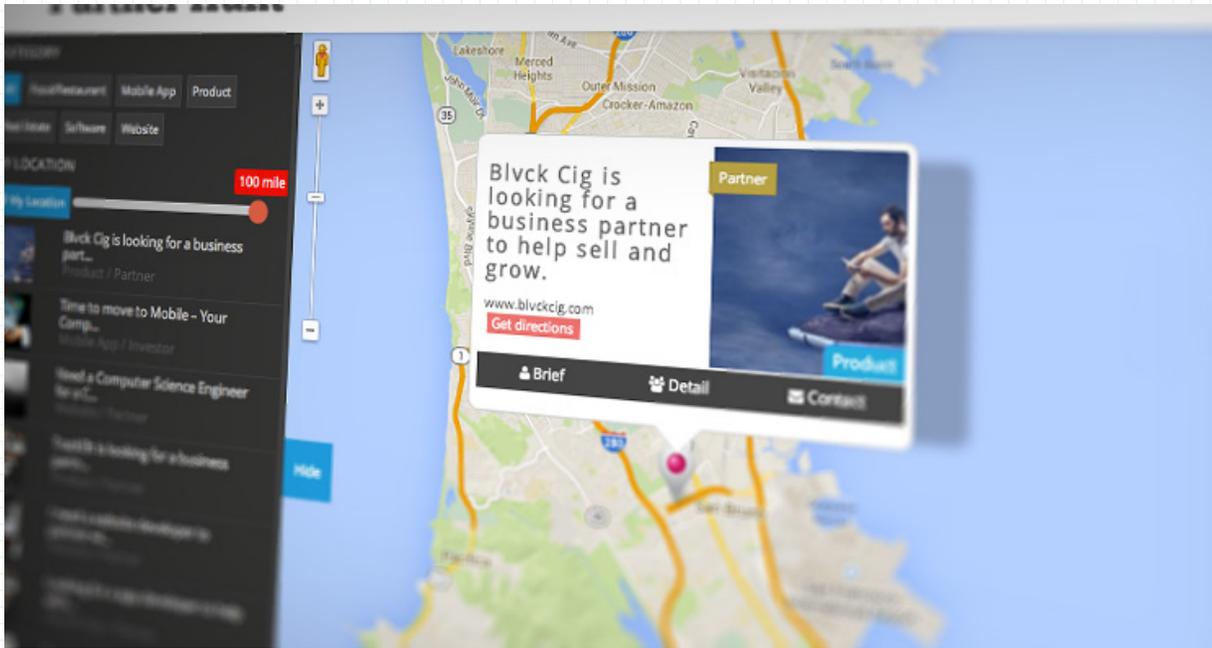
## SECTION 3

# GROWTH SYSTEMS

A new set of services is allowing the Maker community to take their projects from personal passions to full-fledged product lines by providing flexible and cost-effective access to financial capital, copyright management tools and manufacturing facilities. These resources are emerging to help entrepreneurs compete with traditional companies by offering scalable solutions that can meet the demands of a growing business without the need to develop proprietary tools or invest in permanent infrastructure.

### KEY COMPONENTS

- Elastic Finance
- Gated IP
- Instant Scale Production



Partnerrhunt

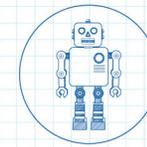
# Elastic Finance

Instead of relying on friends and family to fund their latest ideas, makers are turning to emerging financial services to increase their cash flow and take their venture to the next level. Whether through tapping into niche crowdfunding networks or an appealing micro loan, these services are helping makers see their initial visions manifest in the real world while garnering greater public attention prior to launch.

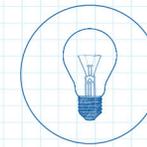


"Today, it's easier than ever to prototype your brilliant napkin sketch, make a compelling crowdfunding video, and pre-sell thousands of units with a scrappy team. Crowdfunded products like Pebble, Oculus Rift, and Makey Makey might not have been seen the light of day 10 years ago."

— David Endler, Founder, Foundry.



Pro-Maker



Entrepreneur



Scale It



Sell It

## How To Use

- **Start Small**

Look beyond traditional funding sources in favor of methods that give your aspirations the time and support they need to grow without having to pay back immediate returns.

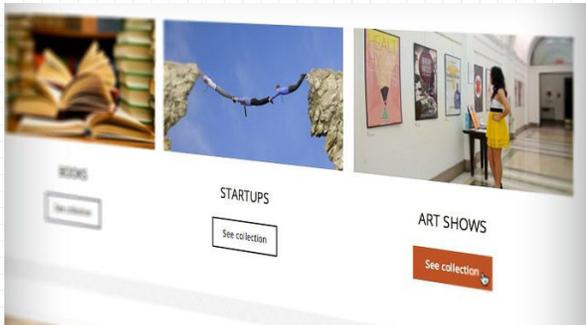
- **Get Behind The Numbers**

Familiarize yourself with the intricacies of crowdfunding by tapping into the people behind successful projects to align your expectations with the realities of the process.

- **Go Beyond Dollars**

Take advantage of comprehensive services like Dragon Innovation, who tailor their offerings to your specific needs, providing not only financial support, but also consultation during each phase of the making process.

**BEST IN CLASS EXAMPLES**



**CROWDFUNDING SITE FOCUSES ON SUPPORTING LATE STAGE DEVELOPMENT**

Crowdlaunch.it provides a platform for writers with a completed book to raise funds to bring their work to market. Unlike crowdfunding giants like Kickstarter and Indiegogo, Crowdlaunch.it focuses on artists that have a finished or are in the last stage of their work. Unlike traditional crowdfunding that has an element of risk involved based on the fact that some products might never see the light of day, Crowdlaunch.it gets consumers to think more like venture capitalists only offering up money when the product is guaranteed. While the site is currently focused on enabling authors, Crowdlaunch.it hopes in future to be a platform for makers of all kinds such as musicians, indie filmmakers, sportspeople, event organizers and even startups

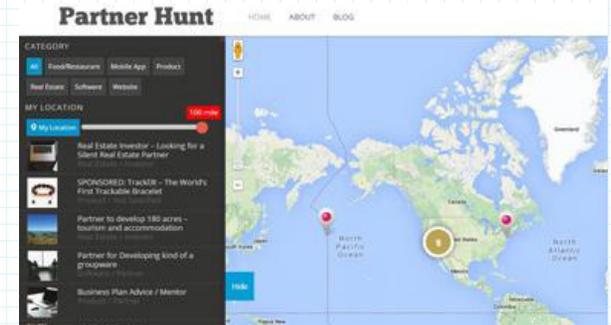
[crowdlaunch.it](http://crowdlaunch.it)



**COMMUNITY MARKETPLACE ADDS CROWDFUNDING FEATURE FOR SELLERS**

Etsy, a Brooklyn-based peer-to-peer e-commerce website focused on handmade and vintage items, has launched a program to help Etsy sellers grow their businesses and create new products. The program, called Fund on Etsy, diversifies Etsy's revenue streams and creates a way for the company to forge more meaningful relationships with their sellers. Money raised by sellers can go towards expenses such as studio expansions, purchasing new tools or staffing costs. Sellers' campaigns range in scope, goals and products but clearly illustrate to buyers how their funding will help the artists expand their current business. Fund on Etsy will charge sellers interested in setting up a campaign Etsy's standard 3.5% per transaction rate plus a 20-cent listing fee.

[etsy.com/fund-on-etsy](http://etsy.com/fund-on-etsy)



**STARTUPS LEVERAGE PLATFORM TO FIND NEARBY INVESTORS AND PARTNERS**

Partnerhunt is a platform that connects entrepreneurs and investors locally. With the increasing interest to support local retailers and eat local food, people want to collaborate with local business partners, too. As a listing service, users can post their business proposals to the site map by categories such as product, real estate and mobile and VC or Angel Investors can search for the teams in need of funding nearby. Investors can set a mile radius limit to ensure they can quickly locate the most relevant partners.

[partnerhunt.com](http://partnerhunt.com)

**OTHER PROJECTS TO CHECK OUT**



**Crowdsurfer**

Peer To Peer Finance Platform Analyzes Data And Intelligently Recommends Investment Options

[crowdsurfer.com](http://crowdsurfer.com)  
[bit.ly/1pFsgVK](http://bit.ly/1pFsgVK)



**Square Capital**

Small Business Loans Paid Back With A Small Percentage Of Each Transaction

[squareup.com](http://squareup.com)  
[bit.ly/lisqYwr](http://bit.ly/lisqYwr)



**Kabbage**

Lender Mines Data to Build Flexible Plans for startups and Entrepreneurs

[kabbage.com](http://kabbage.com)  
[bit.ly/SXFH6E](http://bit.ly/SXFH6E)

**EXPERT THINKING**

"A total of 128 hardware companies pre-sold nearly \$70 million in products in Q1 - that's something like 35 percent of the total dollars hardware projects had raised since Indiegogo and Kickstarter first launched over five years ago."

— Kate Drane, Senior Director, Indiegogo.

"Having the option to mass produce inventions will allow end users to benefit. Currently, there are many great inventions that end users will never see or use due to the lack resources for making them widely available."

— Mick Ebeling, Founder, Not Impossible Labs.



3DLT

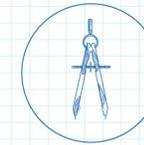
# Gated IP

An emerging set of platforms and services are making it easier for designers and inventors to navigate the complex landscape of copyright. These new tools allow makers to focus on their craft without having to worry about losing ownership of their ideas or infringing upon the intellectual property of others.



"Gated IP is a double edged sword and one that will continue to be debated by many. We believe in protected IP rights for creators, but when a device is able to improve the health of others, open access to such IP should be made."

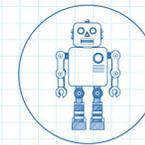
— Mick Ebeling, Founder.  
Not Impossible Labs.



Educator



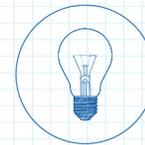
Prototype It



Pro-Maker



Scale It



Entrepreneur



Sell It

## How To Use

- **Protect Your Ideas**

Use platforms that are dedicated to IP-protected processes like API Commons to safely share work and get feedback without having to understand all of the intricacies of copyright protections.

- **Outsource Answers**

Tap into the larger community to get faster, less bureaucratic responses to your IP issues and challenges to free the creation process from question

- **Stream Securely**

Take advantage of marketplaces like 3DLT, which ensure that your designs are properly protected from mass duplication.

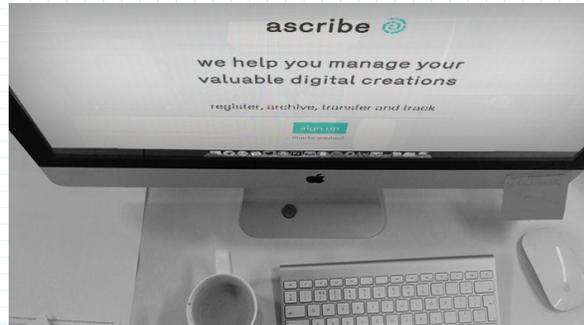
**BEST IN CLASS EXAMPLES**



**MARKETPLACE FOR 3D PRINTING STREAMLINES FILE SHARING TO ENSURE FAIR USE**

3D printing marketplace 3DLT has partnered with streaming cloud service Authentise to protect 3D printed objects' intellectual property by mainlining the transfer of files through a controlled feed. Authentise streams 3D design files available on 3DLT's platform directly from the cloud to the printer on a singular basis, preventing customers from downloading and storing files on their personal devices. By streaming the data to a 3D printer it ensures a one-time print, preventing customers from potentially modifying the files, uploading them to a file sharing site of their own, or printing multiple copies and selling them without a license. The partnership provides a secure marketplace for Makers concerned with the ownership and production of their ideas, differentiating 3DLT from other 3D content marketplaces.

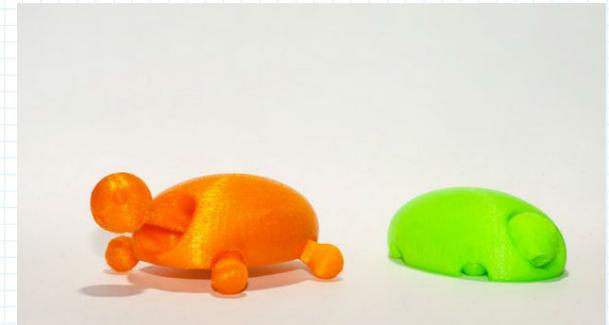
[3dlt.com](http://3dlt.com)  
[bit.ly/1qyRx5D](http://bit.ly/1qyRx5D)



**BLOCKCHAIN TECHNOLOGY HELPS CREATORS PROTECT THEIR DIGITAL IP**

Ascribe, a Germany-based startup, enables artists and writers to create unique, trackable, digital copies of their work to alleviate worries about losing ownership rights of their work. The service enables artists to sell digital property similar to how traditional physical pieces of art are sold. Artists can prove the authenticity of their digital creations through official cryptographic certificates which detail ownership history. Ascribe creates unbreakable links between artists and their work with a timestamped cryptographic ID which is attached to their files on a public database in the form of a blockchain. Once artists have registered their work they can transfer work securely to a paid collector for ownership or as a loan for a period of time.

[ascribe.io](http://ascribe.io)



**3D PRINTED TOY MARKETPLACE SAFEGUARDS DESIGN COPYRIGHTS**

ToyFabb is an online 3D printing toy marketplace which aims to bring safer, more creative toys to the market and reduce the carbon footprint of the industry. Designers can create and submit their own creative toy ideas to the website, while retaining copyright protection over their work. Consumers browsing the site can pick the toys they like, and after purchase they are granted one-time access to the STL file via stream, not by direct download. The model ensures that each object cannot be endlessly replicated, while also giving consumers access to a wide range of creative designs without the need for costly shipping and packaging.

[toyfabb.com](http://toyfabb.com)

**OTHER PROJECTS TO CHECK OUT**



**Secured3D**

Encrypted 3D File Platform  
 Ensures Secure Remote  
 Printing  
[secured3d.com](http://secured3d.com)



**Tagg.Ly**

Smartphone App Watermarks  
 Your Amazing Mobile Photos  
[tagg.ly](http://tagg.ly)  
[bit.ly/1lMbKmU](http://bit.ly/1lMbKmU)



**Unglue.it**

Crowdfunded e-Books Become  
 Copyright-Free After Reaching  
 Their Target  
[unglue.it](http://unglue.it)  
[it.ly/T1J2Sj](http://it.ly/T1J2Sj)

**EXPERT THINKING**

Rights owners will argue that embracing 3D printing should not reduce their rights. But what is it that a rights owner is trying to protect—is it a design or a form of software? And what sort of protection is most appropriate?

— The Guardian. 2014

3D printing will test U.S. intellectual property laws, just as software, MP3 players, and the Internet did.

— Wired. 2013

The need to balance these interests - ensuring that incentives and rewards are in place for those who invest in new ideas, without stifling innovation and openness in the use of online designs - will be a key challenge for IP policymakers going forward. Mechanisms that facilitate the licensing and legitimate sharing of design files will play a major role in meeting this challenge.

— WIPO (World Intellectual Property Organization) Magazine. 2013



Maker's Row

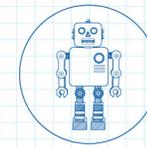
# Instant Scale Production

Makers of all abilities can tap into a distributed network of manufacturers to take their product from working prototype to mass-produced product line. A new set of services are connecting makers with the cost-effective resources necessary to take their bespoke inventions into full-scale production, helping them grow their entrepreneurial aspirations into operational businesses.

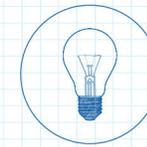


"The ability to do rapid prototyping and crowd funded projects has driven the number of accidental entrepreneurs who previously had to figure out on their own how to do small and large run production. Manufacturing as a Service will play a key role in taking an idea end to end."

— Carrie Motamedi, VP Marketing, TechShop.



Pro-Maker



Entrepreneur



Scale It



Sell It

## How To Use

- **Make It Local**

Reduce shipping and environmental costs by contracting with small-scale producers and manufacturers in your area, while also helping to support the local economy.

- **Competition At Scale**

Access to new manufacturing solutions is flattening the marketplace, allowing anyone with a great product to begin competing with major corporations for customers.

- **Metered Growth**

Tap into a flexible solution like Makers Row to produce your product in limited batches to meet early demand, while also allowing for the testing and refining of designs.

**BEST IN CLASS EXAMPLES**



**MAKERS CONNECTED WITH THE APPROPRIATE MANUFACTURING BASE**

Maker's Row is a Brooklyn based startup that uses its database and networking to help connect smaller designers and Makers with the appropriate manufacturer. Although Maker's Row currently only operates within the apparel industry it has plans to expand into other industries, and has already signed up over 3,000 manufacturers and about 31,000 companies that need things produced. Manufacturers begin by registering on Maker's Row's site for free. Then, apparel companies pay a \$10 fee to post specifications and drawings of product they want to sell. Although the company is still in it's early stages, one of the first factories to sign up on the site, located in New York City, now gets more than 20% of its sales through Maker's Row. Maker's Row raised \$1M in seed funding according to CrunchBase data from 2014 and has over 4K manufacturers and over 45K brands and businesses on its platform.

[makersrow.com](http://makersrow.com)

**OTHER PROJECTS TO CHECK OUT**



**Matter.io**

Full Service Factory Enables Manufacturing Without Inventory Or Overhead

[matter.io](http://matter.io)



**Floow2**

Pooled Resource Platform Allows Makers To Rent Out Or Sell Unused Equipment And Services

[floow2.com/sharing-marketplace.html](http://floow2.com/sharing-marketplace.html)  
[bit.ly/1pfkCmb](http://bit.ly/1pfkCmb)



**3D Hubs**

Online community Connects A Worldwide network Of 3D Printers And Makers

[3dhubs.com](http://3dhubs.com)  
[tnw.co/1qFiuEY](http://tnw.co/1qFiuEY)



**DEDICATED HUB MATCHES MAKERS WITH APPROPRIATE MANUFACTURERS**

Online platform Brite Hub connects entrepreneurs with select manufacturers and other service providers needed to get their products to market. Entrepreneurs looking to prototype or produce their projects can create a Request for Quote (RFQ) on the platform. Manufacturers and service providers (such as design specialists) who match the requirements of specific RFQs can respond with quotes for their services. Brite Hub enables Makers to easily connect with multiple providers, examine quotes and contact them directly to begin the production or prototyping process.

[britehub.com](http://britehub.com)



**SHARING ECONOMY FOR CREATIVE TOOLS AND EQUIPMENT**

KitSplit is a platform that connects small production companies, studios, and individuals with creative equipment to lease their unused gadgets to each other. Over \$1million worth of cameras, drones, VR headsets, and other high-end production tools are available through the platform. In addition to helping companies and individuals make money off of their unused equipment, the platform also helps producers and creators to make new connections when they meet to exchange their wares creating an additional impact on the creator industry.

[kitsplit.com](http://kitsplit.com)

**EXPERT THINKING**

"The digital supply chain from design model to simulation and additive manufacturing will merge with raw material supply (3d printer 'ink') to produce personal products in a hyper-localized context. No need for massive factories, warehouses and containerport infrastructure, just a means to ship bulk products (resins, powders, etc.) efficiently."

— Jordan Brant. Technology Futurist for Autodesk.

"Being able to drive 45 minutes from the studio to the machine shop is invaluable, especially as we move from larger production runs of fewer designs to shorter production runs of more designs."

— Joey Roth. Designer. Joey Roth Design Studio

# Support Systems—Find Assistance To Help Your Project Grow.

Watch your project flourish with the help of the following one-stop resources supporting you at various touchpoints throughout your entire process of 'making'.



## Makers Nation

Maker's Nation provides creative entrepreneurs the business education and community network they need to grow their business in the creative economy.

[makersnation.org](http://makersnation.org)



## Unanimous Craft

Unanimous Craft is a membership-based directory of resources for crafters, artists, makers and indie business owners that allows people to rate the tools that are useful in running their business.

[unanimouscraft.com](http://unanimouscraft.com)



## Christie Street

Christie Street is a crowdfunding site which additionally provides expertise in launching and pre-selling inventions.

[christiestreet.com](http://christiestreet.com)



## Dragon Innovation

Dragon Innovation offers companies a clear path from prototype through production with manufacturing expertise, trusted connections and a funding platform, all optimized for hardware.

[dragoninnovation.com](http://dragoninnovation.com)



## Indiemade Resources

Indiemade Resources offers website creation tools and additionally resources for makers to learn how to start a craft business, sell crafts, or learn personal branding.

[indiemade.com/resources](http://indiemade.com/resources)



## Maker's Row

Maker's Row simplifies manufacturing processes and makes them easy to access by offering makers a 6 stage process to creation.

[makersrow.com](http://makersrow.com)



## Etsy

Etsy's Craft Entrepreneurship Program reaches low-income makers US cities and guides them in turning their craft skills into supplemental income.

[etsy.com](http://etsy.com)

# Want To Know More? Follow These Experts

## Interactive Building Blocks



**Liam Casey**  
Founder of PCH  
[@liamcasey](#)



**Bethany Koby**  
Co-Founder of  
Tech Will Save Us  
[@bethanykoby](#)



**Matthias Bürger**  
Co-Founder & CEO,  
TinkerBots  
[@MatthiasBrgrer](#)

## Accessible Design Tools



**Ayah Bdeir**  
Founder of  
littleBits  
[@ayahbdeir](#)



**Carl Bass**  
CEO of Autodesk  
[@carlbass](#)



**Sean Michael Ragan.**  
Co-Founder,  
Editorial Director of  
Foundry  
[@seanragan](#)

## Multi-Approach Prototyping



**Carrie Motamedi**  
VP Marketing of  
TechShop  
[@suzychap](#)



**Stephanie Mueller**  
Co-Creator of  
Fabrickation



**Anna Kaziunas**  
**France**  
Digital Fabrication  
Editor for Make  
Media  
[@akaziuna](#)

## Intuitive Programming



**Einaras Gravrock**  
CEO of CUJO  
[@Einaras](#)



**Inês Henriques**  
CEO of Ynvisible



**David Karp**  
Co-Founder, CEO  
and President of  
Tumblr  
[@davidkarp](#)

## Skills Incubator



**Kate Drane.**  
Senior Director of  
Indiegogo  
[@KateDrane](#)



**Doug Richard**  
Founder of School  
for Creative  
Startups  
[@dougrichard](#)



**Jake Schwartz**  
CEO & Co-Founder  
of General Assembly  
[@jakeschwartz](#)

## Collaboration Hubs



**Mark Hatch**  
Co-Founder of  
TechShop  
[@markhatch](#)



**Ellie Kemery**  
Co-Founder of  
MakerHaus  
[@elliekemery](#)



**Neil Gerschenfeld**  
Director of the  
Center for Bits and  
Atoms at MIT  
[@NeilGerschenfeld](#)

## Maker Marketplaces



**Rachel Shechtman**  
Founder of Story  
[@rachelshechtman](#)



**Brit Morin**  
Founder of Brit  
+ Co  
[@brit](#)



**Limor Fried**  
Founder of Adafruit  
[@ladayada](#)

## Elastic Finance



**David Endler**  
Founder of Foundry



**Scott Miller**  
CEO & Co-Founder  
Dragon Innovation  
[@dragoninnovate](#)



**Kathryn Petralia**  
COO and  
Co-Founder of  
Kabbage  
[@kabbitch](#)

## Gated IP



**John Hauer**  
CEO of 3DLT  
[@3DLTJohn](#)



**Catherine Casserly**  
CEO of Creative  
Commons  
[@cathycasserly](#)



**Mick Ebeling**  
Founder of Not  
Impossible Labs  
[@MickEbeling](#)

## Instant Scale Production



**Ben Kaufman**  
Founder of Quirky  
[@benkaufman](#)



**Jenny Lawton**  
President of  
Makerbot  
[@jennylawton](#)



**Matthew Burnett**  
Co-Founder,  
Maker's Row  
[@makermatthew](#)

## About Intel

This independent report has been kindly underwritten by iQ by Intel. iQ by Intel is a news site that narrates the impact of technology on our lives. It connects readers to the trends and discussions that are moving our planet forward.

Their mission is to highlight how far we've come as a human race, to explore our basic notion of human capabilities and to remind us all of the many ways our lives are connected and enriched through technology.

At its core, iQ is an intelligent system that curates content shared by leading thinkers, engineers and scientists at Intel. iQ is powered by ideas, but it also shares the content grabbing our attention beyond Intel's walls, getting smarter through the developments and discussions from the wider social web.

Their aim is to provide insight into what is driving our belief that technology unleashes the world's human potential to create a better future. iQ is Intel's home on the web to help share this story.

"iQ by Intel" is brought to you by the employees of Intel, our global partners and the Intel Social Media Center of Excellence.

[iq.intel.com](http://iq.intel.com)

## About PSFK / Team

Each day we share better ways to live, work and play through PSFK.com and social platforms. We publish new ideas across areas such as design, retail, technology and travel (of course) and hit 10 million impressions per month across our channels.

Our thought leadership reports are written by our PSFK Labs team—a group of researchers who study the trends in market places and advise brands like Apple, BMW, Google and Samsung on decisions to make to leverage emerging opportunities and threats. Check out PSFK's other reports on Cities, Health and Retail—plus branded content editorial series produced in partnership with sponsors on the Future of Light, the Real World Web and Wearable Tech.

[psfk.com](http://psfk.com)  
[labs.psfk.com](http://labs.psfk.com)  
[@psfk](https://twitter.com/psfk)

### PSFK Labs

42 Bond Street, 6th Floor  
New York, NY 10012 USA  
[labs.psfk.com](http://labs.psfk.com)

### Piers Fawkes

President & Founder  
[piers.fawkes@psfk.com](mailto:piers.fawkes@psfk.com)  
+1 646.520.4672

### Tim Ryan

Director, Consulting  
[tim.ryan@psfk.com](mailto:tim.ryan@psfk.com)  
+1 646.520.4672

### TEAM

#### Project Leads

Piers Fawkes  
Scott Lachut

#### Designer

Tahui Lee

#### Research

Andrew Vaterlaus-Staby  
Libby Garrett  
Tim Ryan  
Jeff Squires  
Lauren Wong