

Tips for Making, Marketing, and Selling Your Hardware

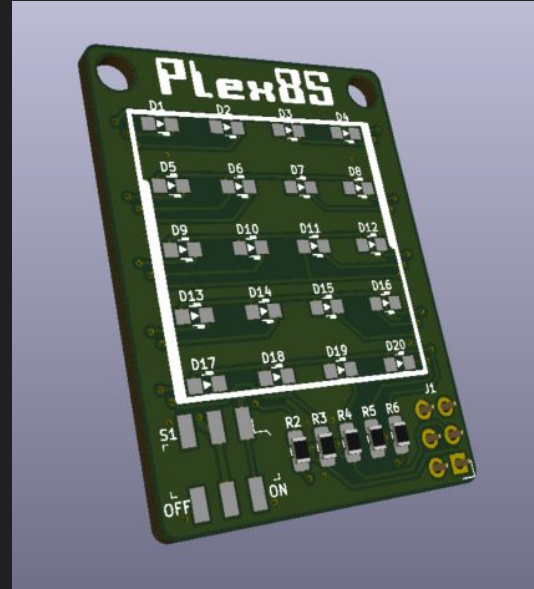
(Ideally, with free and/or open source tools)

Lots to cover...

- Making your widget
- Manufacturing your widget
- Selling your widget
- Marketing your widget

F = Free

OS = Open Source



The Design Stage

- PCB
 - KiCad (F, OS)
- Mechanical
 - FreeCAD (F, OS)
 - Fusion 360 (F for <\$100k/yr)
- MCU toolchains/compilers
 - AVR-GCC (F, OS)
 - GNU ARM Embedded Toolchain (F, OS)
 - RISC-V GNU Toolchain (F, OS)
- Development environments
 - Eclipse (F, OS)
 - Lots of plugins
 - Atom (F, OS)
 - PlatformIO (F without debugging, OS)
 - VSCode (F, OS)
 - PlatformIO

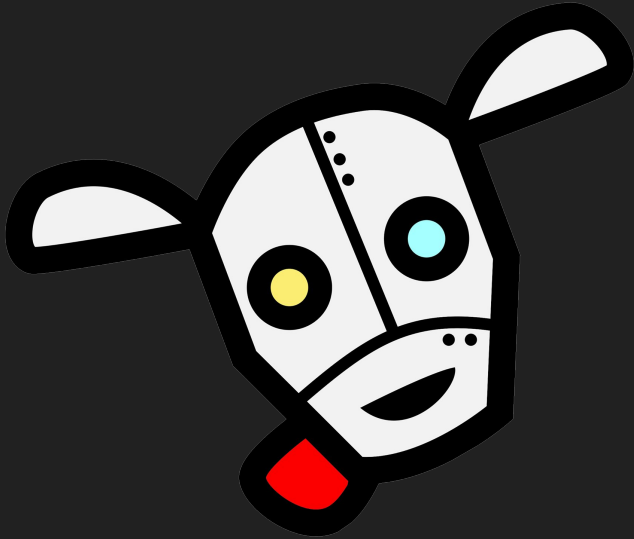
Manufacturing

- Move to Shenzhen
- Pitch SparkFun, Adafruit
- Small turnkey manufacturing
 - Seed Studio Propagate
 - Screaming Circuits
- 1 or 2 person shops
 - Small Batch Assembly



Photo credit: globalspec.com

Selling



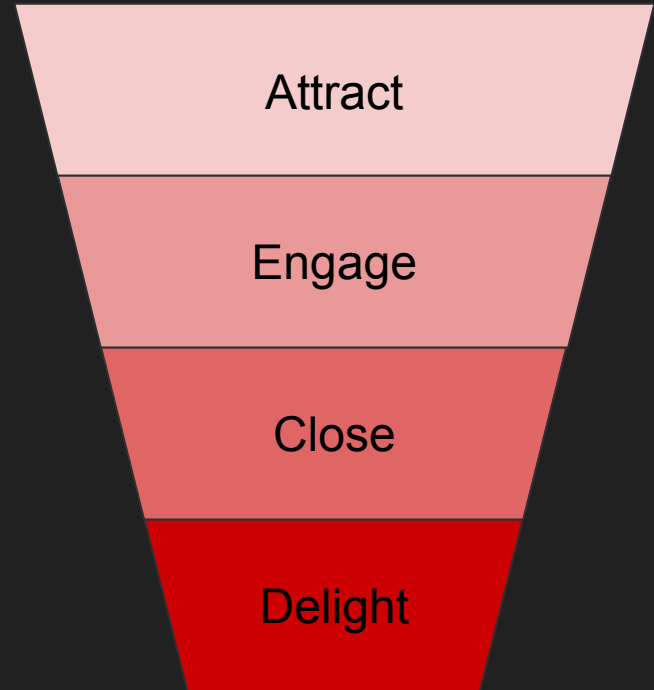
- Pitch SparkFun, Adafruit (will package/ship)
- List on a marketplace (more eyeballs)
 - Tindie
 - Amazon
 - GroupGets
- Host your own site (more control)
 - WordPress + WooCommerce (F, OS)

Marketing (aka “The Dark Side”)



- “If you build it, they will come” does not work
- Outbound marketing
 - Printed/radio/TV ads, website banners, etc.
 - Generally costs \$\$\$
- Inbound marketing
 - Blogs, videos, podcasts, social media
 - Can be done for FREE

Basic “marketing funnel” example

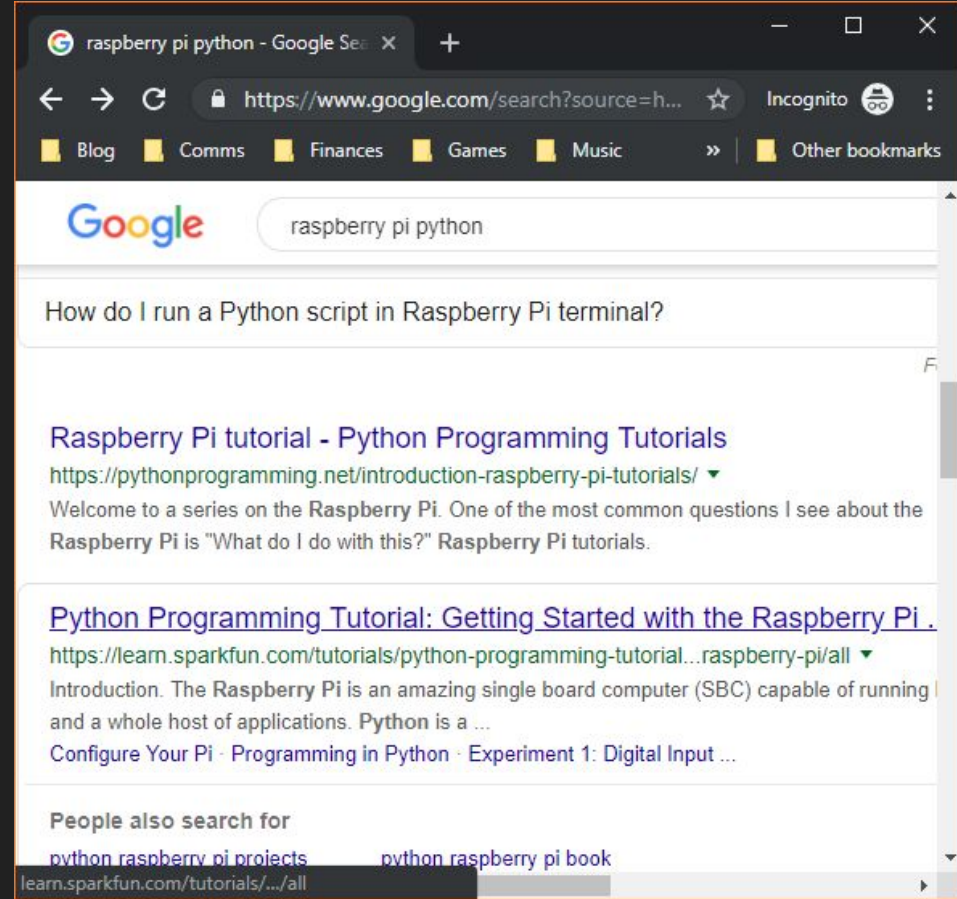


Attract

Provide free value to your audience

1. Identify your target audience
2. Find their platform(s)
3. Create content for that platform(s)

3rd Google result for
“Raspberry Pi Python”



Attract

- Provide value
 - How to X
 - Current events or news
 - Inspiration (projects)
- SEO title tools
 - [google.com/trends](https://www.google.com/trends)
 - neilpatel.com/ubersuggest/

Possible Platforms

- Blog
 - WordPress (F, OS)
- Social Media
 - Facebook, Twitter, Instagram, etc.
- Podcasts
 - PodBean, Buzzsprout, Anchor
- Video
 - YouTube, Vimeo

Engage

- Like
- Comment
- Ask questions
- Do live events
 - Facebook, Instagram
- Send regular newsletter
 - Mailchimp (free for <2k subscribers)

★ ADAFRUIT DAILY ★

Zener voltage – That 5.1 volt zener diode won't always have 5.1 volts across it! The zener voltage varies with temperature and current. You could easily see variations of 20%!

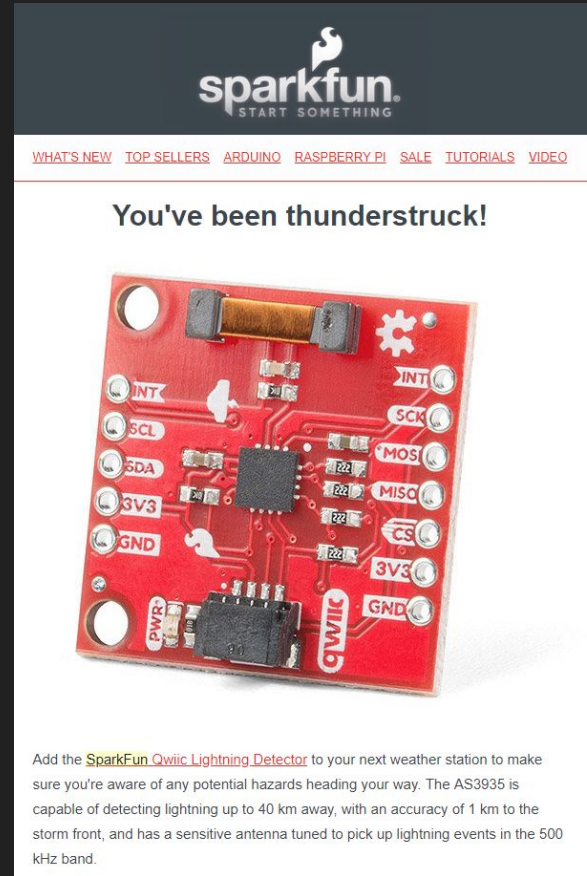


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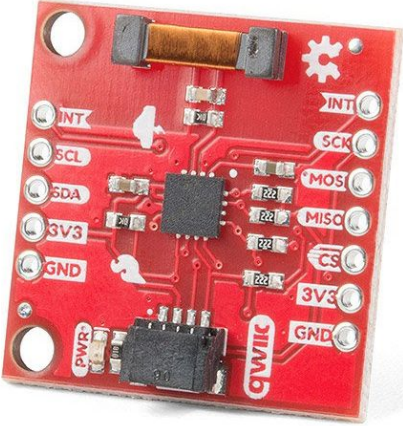
Close

- Directly ask followers to buy or back product/service
 - Your followers should be your target audience
- Ask a few times, don't spam
 - Multiple channels/platforms
- Analysis tools (conversion rate)
 - Google Analytics



The screenshot shows an email newsletter from SparkFun. At the top is the SparkFun logo with the tagline "START SOMETHING". Below the logo is a navigation menu with links for "WHAT'S NEW", "TOP SELLERS", "ARDUINO", "RASPBERRY PI", "SALE", "TUTORIALS", and "VIDEO". The main heading of the email is "You've been thunderstruck!". Below the heading is a high-quality photograph of a red Qwiic Lightning Detector module. The module is a square PCB with various components, including a central black chip, several resistors, and a small antenna. It has a Qwiic connector on one side and several pins on the other, labeled with functions like INT, SCL, SDA, 3V3, GND, MOSI, MISO, CS, 3V3, GND, and PWR. Below the image is a short paragraph of text describing the product's capabilities.

You've been thunderstruck!

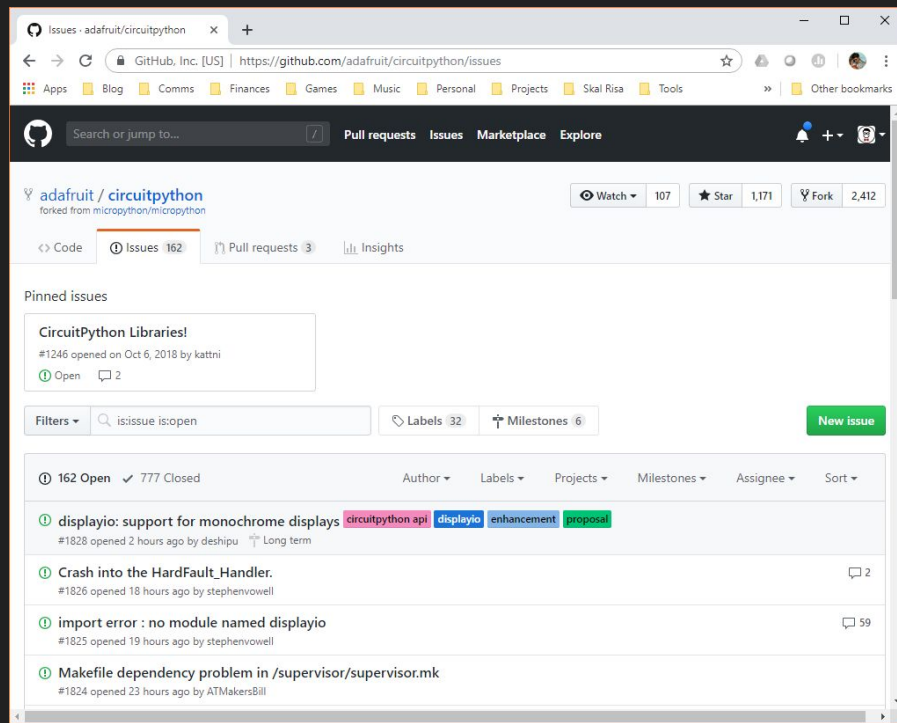


Add the [SparkFun Qwiic Lightning Detector](#) to your next weather station to make sure you're aware of any potential hazards heading your way. The AS3935 is capable of detecting lightning up to 40 km away, with an accuracy of 1 km to the storm front, and has a sensitive antenna tuned to pick up lightning events in the 500 kHz band.

SparkFun's email newsletter is a good example of informing customers about products

Delight

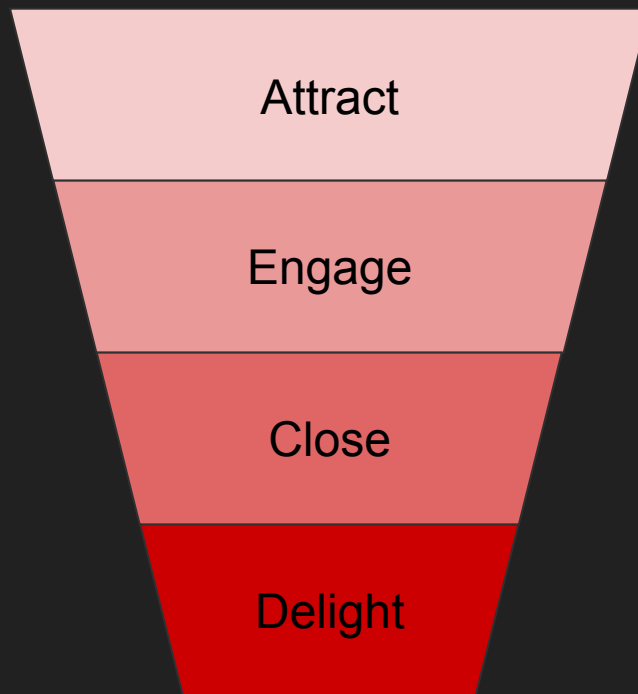
- Convert customers into advocates
- Great customer support
 - GitHub (F)
 - MantisBT (F, OS)
 - Bugzilla (F, OS)
 - Social media
- Build community
 - Ask for feedback
 - Send follow-up email
 - Host forums




GitHub's issue tracking is solid

Lessons

- Always Be Testing
 - Design, Test, Measure, Tweak, Repeat
- Tools
 - Google Analytics (F)
 - Mailchimp (F-ish)
 - Serposcope (F, OS)
- Patience, young grasshopper
 - “It takes 10 years to build a brand”
~ Marketing adage
 - “It takes 20 years to make an overnight success.”
~ Eddie Cantor



Making Media

- Product photos are crucial
 - GIMP (F, OS)
- Vector graphics (logos)
 - Inkscape (F, OS)
- Audio
 - Audacity (F, OS)
 - Get a better mic 
- Screen recording (tutorials)
 - ShareX (F, OS)
- Video editing
 - Blender (F, OS)





That's all Folks!



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