

# How to Start Your Own Open-Source Hardware Business

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# Background

- Faculty member doing research in computer graphics
- Owns an open-source hardware business with self-designed products such as smart web-based sprinklers (**OpenSprinkler**), wearable microcontroller board (**SquareWear**), other useful gadgets (**RFToy**, **AASaver...**)

# 1. Think about Something You Need

- Good ideas always come from real-world problems.
- Think about something you need in your life that's not readily available on the market.
- This gives you self-motivation.
- In my case, it all started when I needed a controller to water the lawn

## 2. Learn the Skills or Find Partners

- Make a quick prototype first (using Arduino, Raspberry Pi)
- Next, make a custom PCB (e.g. EagleCAD)
  - Learn electronics and circuit design skills
  - Open-source culture makes this a lot more accessible
- If you don't have these skills or don't want to learn, find someone who has.

# 3. Make it Know to the World

- Start a website, blog about your project.
- How to advertise your project?
- Send it to the Make Magazine Blog, Hack A Day, Dangerous Prototypes etc.
- Consider going to the Maker Faire.
  - Two big events every year
  - Numerous mini maker faires all over the country.
- If it's good, people will buy.

## 4. Make it Open-Source (OS)

- Why? Is this killing my business?
- If your project is based on other OS projects, legally you are bound to make yours OS too.
- It's a great way to attract user contributions. People are much more likely to help you if you make it OS.
- Also, people are much more likely to be tolerant to bugs and issues. Get them to help testing.
- For me as an educator, I always wanted my business to have an educational aspect.

## 4. Make it Open-Source (OS)

- In the case of OpenSprinkler, users made numerous contributions:
  - Feature suggestions
  - Feature implementation
  - Bug fixing
  - Language support
- It also gives the product a competitive edge.

# 5. Scale Up

- If you are successful, you may be getting tons of orders. That's where you have to consider scaling up.
- Injection molding, component sourcing, product packaging.
- Making hardware goods is MUCH MORE difficult than making software goods.
- Make small batches yourself; source large batches out.



## 6. Funding and Hiring

- DO NOT take investment right away.
- You can start small and grow at a slower pace.
- Keeping it small helps you remain agile to business changes.
- If you take someone's money, it usually comes with strings.
- You will have to start hiring people to help you with business, or find business partners.

# 7. Legal Issues

- What if someone sues you?
  - You are probably thinking too much
  - Register for LLC, get business insurance
- What if a company sues me?
  - Again, making it open-source helps.
- What about FCC rules?
  - You need to learn about it.
- Don't let legal concerns overwhelm you.

# OpenSprinkler Time Line

- 2007: first Arduino encounter
- 2009: first maker faire
- Summer 2010: minty valve controller
- Summer 2011: OpenSprinkler 1.0 prototype
- Oct 9, 2011: Official OpenSprinkler 1.0, first order came in before the website was even ready.
- 2012-2014: OS 1.0, 1.1, 1.2, 1.3, 1.4, 2.0, 2.1, 2.2
- Feb 18, 2013: OpenSprinkler Pi 1.0
- Nov 15, 2013: OpenSprinkler Beagle 1.0
- 2014: Rayshobby products at Micro Center