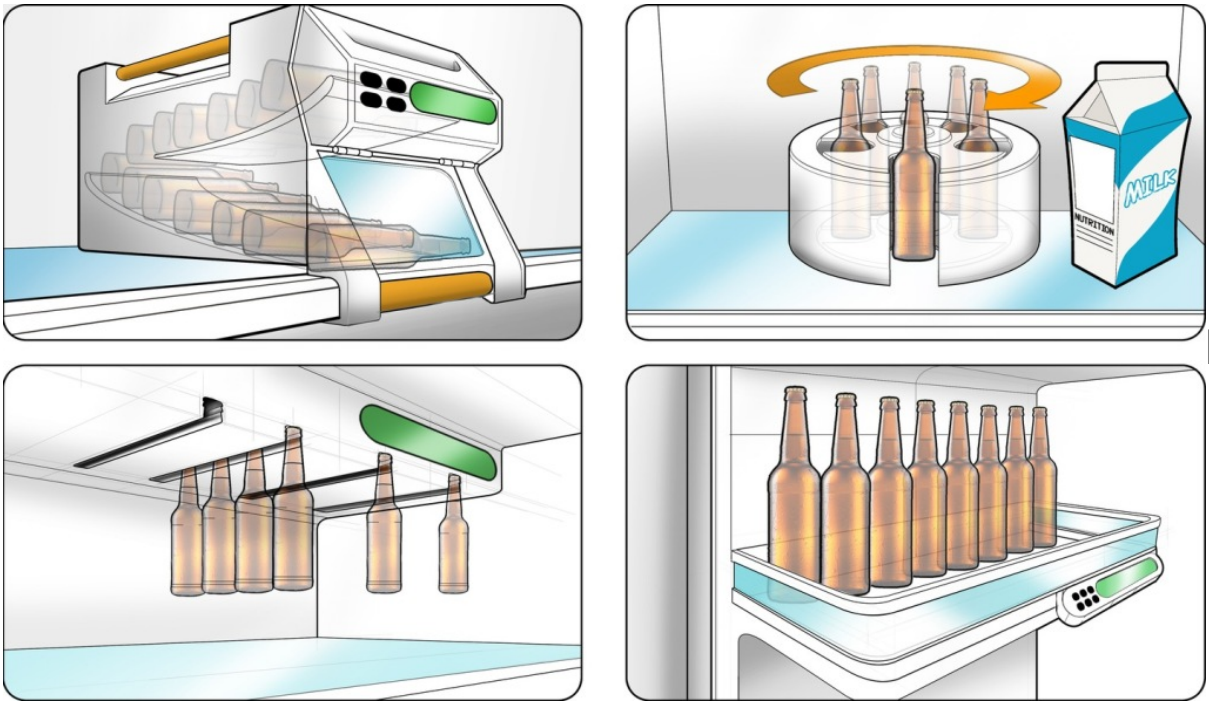
Pimp My Fridge – My Week Hacking in Louisville, KY

I've recently gotten interested in hacking hardware, which lead me on a journey to FirstBuild where I got to work on hacking together the Beerminder!



Meeting FirstBuild at AT&T Car and Home Hackathon

Back in September, I attended AT&T Car and Home Hackathon in Las Vegas with 3scale to present our APIs. It was a great event with a lot of hardware hacks. During the judging round, I saw some interesting demos by hackers who had hacked a washing machine. They were able to launch the cycle using a smart watch, and it sent a notification when the laundry was ready. It was a really impressive demo that peaked my curiosity.

In the end of our judging round, I went back to the booth were they had the washing machine to ask more about how everything was working. In fact, it's pretty easy:

You see the OBD port on your car? (Hint: It's under the steering wheel…) For years it was only used by manufacturers for diagnosis purposes, until companies like Automatic or Mojio came around and decided to open it up to the community and make a public API. Imagine the same thing with appliances. Companies like GE have started adding an ethernet port on ovens, refrigerators, washing machines and dryers. Similarly to the OBD port, this ethernet port is meant for their tech teams to diagnose problems with the machines, but you can use them in more exciting ways.

FirstBuild was presenting their Green Bean Maker Module, a small board that plugs into these appliance ports and allows you connect them with your laptop or Raspberry Pi. It comes with an API to access sensors data about your appliance, making it easy to know when your laundry is dry, or to pre-warm your oven on your way home for dinner. Not to mention it's written in Node.js – I was sold.

From “Crazy Startup Idea Brainstorm Session”

to Beerminder



After the demos that I’d seen and the great discussion I had with FirstBuild team in Vegas, I was very excited by the possibilities of this new device. I told everybody back in San Francisco about what I’d seen. Over lunch with my team, during one of our “crazy startup idea brainstorm sessions”, we came up with the idea of having a device that could track beers and sodas in your fridge. We have a problem regularly in our office: there are never Diet Coke or beers in the fridge when we want them, so it would be cool to be notified when we need to place another order. I was also inspired by something I’d seen at couple of startups in San Francisco, where they have an iPad mounted on a keg to display stats. This evolved into my idea for the *Beerminder*.

I posted the idea on FirstBuild’s a co-creating platform, where the community can share ideas for projects and try to build them together – the same platform that Local Motors used to build their 3D printed electric car. Seemed like FirstBuild team liked the idea because they invited to spend a week in their micro-factory to build the first prototype! I would help on ideas and building the software.

Before specializing in computer science, I had studied engineering and spent my first two years of masters studying basic mechanical engineering and industrial engineering. While all my freshman friends where building prototype using CNC and water jet cutting, all my projects were virtual on a computer. Our classrooms were comparatively pretty boring, with dozens of computers, and I never really worked with my mechanical engineer friends on common projects again. So I was especially looking forward to this trip to Louisville as an opportunity to connect all the dots and finally work on real product with a variety of engineers in FirstBuild’s micro-factory.

I arrived at the beginning of a two week sprint for ChillHub, a platform that connects devices through USB in the fridge and allows them to communicate with the network using Wi-Fi. It’s basically a Raspberry Pi. The devices have an Arduino chip and connect though the Pi with USB. The goal for those two weeks was to ship three products:

1. Milkscale, a scale for milk jug that lets you know how much milk is left remotely
2. CanCooler, a device meant to cool a can quickly so you can enjoy a fresh drink even if it’s just come from the grocery store
3. And Beerminder.

While I was there hacking on the software part, I got to see all the different phases of the project – from artist design views (awesome job by Symon, who did the rendering at the top of the page), to modeling the prototype using Solidworks, to circuit board design, as well as discussions on commercialization of the product – in a week’s time, from idea to real product.

On the software side, they made an excellent choice to use Firebase for the backend, which is perfect for implementing realtime feedback and working across platforms. As we were still in the design phase for Beerminder, I helped with the code for Milkscale, trying to make it generic so it will work the same for other devices. In the end, we had a working demo. The scale would send the actual weight to Firebase in realtime, and we would display the result in an iOS app.

Takeaways

We faced different challenges throughout the week. *How to modify the fridge to place two USB hubs without losing too much temperature? How could we bend acrylic to make the tray in the Beerminder?* It was interesting to see the way the team got together to discuss solutions. I did not expect it to be similar to what I have seen in software, so it was a surprise for me that they have daily scrum meeting and sprints the same way we do. I guess Lean is everywhere now, and it also makes total sense for a small startup that has to ship product fast and iterate.

I really appreciated this week. It gave me another perspective on innovation and what could be done between hardware and software. I also got to discover Kentucky and Louisville, which seems to be a really active city in the Maker world, with their own Makerspace (LVL1) and mini maker fair. FirstBuild is playing a great role in the community, hosting meetups and hackathons. I also got to attend my first Art Hack, where artists took apart a washing machine and tried to build something with it.

We hear “Internet of Things” everywhere now, I am sure FirstBuild will have a role to play in it with their Green Bean module. Hopefully more manufacturers will open their platforms and build a standard. Until then, I urgently encourage you to checkout all the code opened by FirstBuild and submit your own hack ideas on their platform. Thanks to the team for welcoming me, and thanks to 3scale for letting me take this opportunity!