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Opening the Valve: From Software to Hardware (B)

The day we are shipping hardware to lots of people without writing a single purchase order, we've won.

— Valve Hardware Cabal

After months of rumors, Valve announced three hardware-related products in September 2013. The first, on September 23, was not about hardware at all but about software: a new operating system named SteamOS. Linux-based SteamOS would further the work of the Big Picture project in building software solutions to integrate PC gaming with the living room. SteamOS would be downloadable for free.

The second announcement, on September 25, introduced Steam Machines. Steam Machines were dedicated PCs, running the SteamOS, designed to play games on a television and thus directly compete with consoles. A variety of Steam Machines would be made with various quality and price points. Other than an initial prototype run of 300 machines produced directly by Valve and given away to selected Steam users for feedback, Steam Machines would be produced and sold entirely by third-party providers who would license the SteamOS from Valve for free.

Finally, on September 27, Valve announced the Steam Controller. The Controller would complete Steam's living room integration with a unique player input device. The controller replaced the joysticks of conventional gamepads with two circular trackpads driven by the player's thumbs. The controller was designed with the full suite of Steam games in mind. It was intended to work well both with games often played with other gamepads as well as those traditionally played with a mouse and keyboard. Valve also hoped that in the future games would be developed with the Steam Controller in mind. At least initially, the Steam Controller would be exclusively distributed by Valve on Steam for a yet-to-be-announced price.

These announcements were complemented on January 6, 2014, by the unveiling at the Consumer Electronics Show (CES) in Las Vegas of the first 14 Steam Machines.

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Engagement, Not Replacement

Valve has some goals around manufacturing stuff that are different from those of most companies. Of course we want to make high-quality stuff cheaply with a minimum of headaches or risk. Everyone wants those things. But we will value far more highly than others any manufacturing process that results in our people being closer to customers. Less red tape, less reliance on intermediaries, more freedom, more ability to directly create value. We might think that other companies would value such methods/traits highly too, but in fact they don't, because their companies are fundamentally not built to truly value those things. And so they repeatedly and blindly accept all of the industry's entrenched inefficiencies despite the existence of technologies that could fix the situation. Even Apple, a company with way more than enough resources to empower its hardware individuals, doesn't actually care at all about doing so. They instead largely do the opposite, prioritizing their version of quality control, vertical integration, supply chain predictability, quarterly balance sheets, and most damagingly, a top-down design/engineering organization bolstered by armies of production minions.

— Valve Hardware Cabal

Valve's trio of announcements transformed the PC gaming world. But among the surprises, some were stunned by how little Valve was planning to directly benefit from years of its own research and development. SteamOS would be freely available. Steam Machines would be produced by 14 OEMs, none of which would pay a cent to Valve for Valve's R&D, prototype development, or operating system. Valve was even rumored to be considering handing off production of the Steam Controller for free once it had been fully developed.

Originally, Valve considered a different approach: allowing third parties to develop the controller for them to sell either bundled with the Steam Machines or via Steam while producing Steam Machines in-house. With the controller, however, it quickly became clear that the existing ecosystem for gaming peripherals did not suit Valve. Greg Coomer explained:

> Shipping a traditional controller made by an existing partner would likely support only the 12% of the Steam catalog designed for controllers. We grew incredibly allergic to the idea of shipping our first Valve-branded hardware product as one that had so little value to our customers.
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> Our flat structure is designed to remove every organizational barrier between work and the customer enjoying that work. We say that there's no red tape stopping us from figuring out what our customers want and giving it to them—and we didn't want a partner getting in the way of that. We understood the requirements of the controller better than any partner could because of our structure. The fact that it really needs to support the whole game catalog and that there are a number of physical requirements and ergonomic pieces to it, and the software that actually runs onboard the firmware in the controller and the interfacing with Steam—all these things are pieces that we needed to really keep under our roof in order to make sure that the experience was going to be good for customers.

The opposite realization drove Valve away from internally creating a mass-market Steam Machine. While Valve felt uniquely positioned to balance the various factors involved in controller development, the cabal realized, "We couldn't say the same thing about Steam Machines." Anna Sweet commented:

> And in fact, it's probably the total opposite. Our partners like Alienware (owned by Dell) know more than we do about building PCs—how to do it cost effectively, what pricing versus

performance trade-offs to make, how to get worldwide certifications, etc. Whether the customer is the PC end user or the PC retailer, they actually know the customer better.

Consequently, although Valve originally planned to produce at least an initial line of Steam Machines to help guide the evolution of the segment, it ultimately opted only to produce a small batch of prototype machines as a beta test and market proof for the project.

Partnering with Bureaucracy

That's not to say that partnering was easy for Valve. Valve wasn't used to such a high degree of interdependency with third parties who didn't share their structure. Coomer reflected on some of the more interesting challenges for Valve:

> For so long, our structure has been perfectly suited in many ways to building innovative software, doing it just by ourselves, and not being beholden to anyone outside of these walls. When you build software, and you have a bunch of software engineers working on it, you can have a very inwardly focused discussion and customer-focused real-time decision-making method that really was no longer possible once we made the transition into dealing with matter—physical reality, shipping, long lead times in manufacturing, etc. When other companies are spending hundreds of millions of their own dollars and doing so with such long lead times, how do we interface with them while remaining true to who we are?
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> Our partners often freak out that there isn't anybody at Valve whose responsibility is clearly stated in a title or a job description somewhere. It can seem to them like there's no accountability and no structure for them to rely on, and when we go make promises to customers that involve all of these third parties, it's not just stressing partners out—it's also stretching Valve's organization in new, interesting ways. We are learning fast what works and what doesn't. Valve is constantly changing, but I believe it will be particularly interesting to work through this transition and to be part of the inevitable changes to the company that come out of shipping hardware.

Frank Taylor described one stage of the evolving relationship between Valve and a large contract manufacturer:

> They were very excited to tell us that their senior executive was going to come to meet us, and they were very concerned that he meet with someone equally senior on our side. We actually said to them, point blank, "If the reason that you're having this high-level executive come meet with us is because you think you need to do that to convince us that you're excited about us, it's okay not to do that. If instead it's something you feel is important for you to do, we will do that for you, but we don't need to have that meeting."
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> They had a really hard time responding to that, but ultimately said, "Yes, we need to do the meeting. For the way we work, this is an important step. We need to have our senior person meet your senior person." So we said okay.
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> We all went. We brought Gabe and told him, "This is the meeting where you have to be the ceremonial executive." So he shows up and talks about how he's been in the industry for a really long time and how Valve came to be the way it is. Then they asked him, "Are you going to invest in this?" at which point he predictably turned to all of us and said, "Are we?"

Despite the difficulties involved, Valve appeared to have found an initial way to pursue its strategic aims in the hardware sector, while also preserving its unique organizational structure. Coomer noted:

Even as we become more of a hardware company, there's a strong desire to continue to be as innovative, agile, and able to serve customers as we have always been, even while wrestling with the realities of physical manufacturing. In many ways, we didn't build software the way that software was supposed to be built. We built a company that was designed differently, optimized for incredibly talented people to be self-directed and innovative.

When we become encumbered by the realities of physical hardware manufacturing, it makes Valve annoyed. But our response to that annoyance is different from most companies. Rather than reverting to a more traditional structure, we are again innovating around our approach. Perhaps Valve should be a company that exclusively pushes the innovation frontier by producing prototypes and reference designs, which other companies take as guidance.

Hiring

Valve had made significant progress in hiring hardware experts as full-time employees, but that had also been a learning experience. The first people Valve reached out to were well-known members of the "maker" community—people who were very multidisciplinary, having become experts in many aspects of hardware development in the course of shipping a wide variety of projects. These individuals were often not engaged in the development or manufacture of high-volume commercial projects, instead focusing on small audiences or customer bases. Coomer explained:

This meant that they were very inventive, resourceful, and creative, but not necessarily bound by—or educated in—the processes and restrictions which come with more disciplined product development of the type usually engaged in by large consumer electronics companies. To us, at the outset of our work, this seemed like a very appropriate trade-off.

But as we began to build a group of experts, we also began to teach ourselves, often through painful trial and error, how to look for more hardware people, how to select among them, how to talk to them, what to expect of them, how to interview them, how to woo them, and how to welcome them to Valve and to build a place optimized for their success. As with software engineers, we may have passed over some people early on who we should have engaged further, and we brought some people on who were ultimately not perfect fits for Valve.

It was ultimately the clarity that comes with product focus that provided the stable and empowering environment that the hardware cabal now enjoys. Once it became clear that we needed to build an input device that accomplished a singular goal (playing the entire Steam catalog on a TV, from the sofa), all our priorities aligned and so many decisions got easier. Hiring, too, became easier, because we had near-term requirements and goals to accomplish. Interview questions were easier to author. The team started to grow. Then, when we finally made public announcements about our intentions, recruiting again became easier—better candidates were coming our way more often, but of course once we were in contact, each one still required all the painstaking attention that hiring always requires at Valve.

Valve had also learned to adjust its operating system, at least to some extent, for hardware engineers. Coomer explained:

Traditionally at Valve, engineers are highly mobile within the company. Hardware engineers are far less so, because there are far fewer hardware projects going on at any given time compared to software projects. This affects the cabal composition over time. It is more static, and somewhat more isolated, than other cabals. This will be less true over time, we believe, but for now those traits do cause some issues for the cabal's members within Valve's organization.

The Future

Reflecting on the past several years, the hardware cabal had a distinctly Valve-like vision for the future of hardware. One of them observed:

> Obviously Steam (the Internet, really) was a new kind of superpower in the individual-empowerment-closeness-to-customers direction, and software companies are figuring out how to capitalize on that model. But it is not yet obvious even to the rest of the people who work here, let alone the general public, that the same thing should and can actually happen in the hardware space. People still look at the changes happening in hardware (crowdsourcing, 3D printing, software-enabled DFM, automation that's controlled by the product design engineers) as the exclusive domain of hobbyists or small-scale projects for the foreseeable future. They think of the kind of changes in large-scale manufacturing that could put individuals close to customers as a distant fuzzy future.
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> Most of the distance from customers in high-volume manufacturing currently seems to come *not* from the difficulties in physically producing something, but from the crippling organizational bureaucracy of this category of companies and the entrenched production (and business) models that they've deeply invested in. Working with them is like strapping a deep-ocean oil rig around your neck.
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> The hard part should not be saddling the whole hardware cabal for *months* with the seven middle managers who own the quoting process at a contract manufacturer and their six mechanical engineers who all lie about the schedule or part-sourcing or facilities, and the account manager who is covering his behind and the vice president who won't sign papers, only to start all over again whenever the project goes from one minor revision to the next. If the team all accepted that it was a goal to engineer our way out of that hole, we could concretely make progress towards freedom.
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> Instead, figuring out what to build should be the hard part of the job.

Taylor reflected, "When we initially took a different approach with software, other game developers told us, 'You guys are crazy—you are putting all of our IP out there.' Given how well being 'crazy' in software has worked out for us, we're open to being 'crazy' in hardware as well."