



SELLO

Leveraging an IoT Partner To Scale Your Smart Product from **Pilot to Production**





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IoT Solutions
Hardware Engineering,
Software Engineering, Project

Lifecycle Management

12	
Project Tir	neline
5 Months	

Tech Stack Angular, AWS Microservices, Embedded Firmware







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Gas

Introduction

The average American spends roughly \$2,000 annually on residential energy bills. That's a lot of cash to invest in powering a home, but unfortunately, not all of that \$2,000 is always put to good use. According to the Office of Energy Efficiency & <u>Renewable Energy</u>, between \$200 to \$400 could be going to waste thanks to drafts, air leaks around openings, and outdated heating and cooling systems.

Adding insult to injury is the inflation that's caused home utility bills to soar. Consumers paid 25% more for natural gas at the end of 2021 compared to the previous decade, and the global cost of energy is increasing on the whole.

Beyond rising energy costs there's another concern that looms large for communities around the globe – the impact of energy production on climate change. Society largely depends on burning fossil fuels for electricity generation, heating, and transportation – and wasted energy exacerbates the climate change crisis. <u>PowerX</u> is here to change that.



The Client

PowerX offers a suite of intelligent home monitoring solutions that enables businesses and consumers to receive complete snapshots of their water, electricity, and gas usage on their phones in real time.

At the helm of PowerX is CEO and founder, Manuel Schönfeld. As a former McKinsey consultant, Schönfeld had seen numerous companies struggle to make meaningful impact on climate issues. PowerX was born as his direct response to the role energy

waste plays in climate change. Leveraging remote monitoring and IoT technology, Schönfeld and the PowerX team knew they could create a product that not only cut down on energy waste, but saved customers hundreds of dollars in utilities to boot.

PowerX's product suite includes:

PowerX Water

A cutting-edge ultrasonic flow meter that provides live and historic data to track water consumption and alert users to leaks. **PowerX Electricity**

A set of electric current monitors that shows users how

PowerX Water Heater

A sensor that automatically adjusts the temperature and heat cycle times to optimize usage.

much energy each appliance is using and how much it costs them in real-time.

The PowerX platform is based around a hub that connects to the user's home network or company network via Wi-Fi or an ethernet cable. Using a <u>LoRa network</u>, the hub casts a long-range, low-power, and secure wireless signal that connects all the sensors.

The sensors and back end system provide the following abilities to the PowerX customer:

- Live and historical utility data
- Ability to set custom saving goals by tracking energy and water usage
- Manage entire home energy usage with a single platform
- Be alerted to mechanical problems



With just three powerful products, PowerX provides customers a comprehensive view of their energy usage, empowering them to save on their utility bills and lower their environmental footprint.

The Challenge

PowerX was experiencing growing pains.

With pre-orders from Fortune 500 companies in the pipeline, PowerX was preparing to

scale from 2,000 units to 200,000. But swiftly scaling from prototypes to an enterprise environment came with its own unique set of challenges.

For starters, the existing hardware and software systems were incredibly complex. Varying verticals and versions of the hardware only added a layer of challenge to the project. Both the hardware and software needed to be rebuilt and reconfigured. To do so, PowerX was looking to augment its engineering staff.

After scouring the internet for IoT engineering firms, PowerX initially reached out to Very for staff augmentation services. The Very team was happy to offer PowerX staff support – but we knew from prior experience that our impact is largest when we're empowered to take a strategic, capacity-building approach with our clients. PowerX didn't just need to bolster its engineering team; the burgeoning company needed a

technology partner that offered guidance at critical decision points – one that was deeply rooted in their success. The Very team understood it would need to show, not tell, the value that working with the right consultancy would provide.







Very's Plan of Action

Over five months of close collaboration, Very served as PowerX's trusted guide to position the product line for rapid scaling.

PHASE ONE: TECHNICAL DESIGN SPRINT

We began by conducting a comprehensive audit of all of PowerX's systems during the technical design sprint. The team identified opportunities for improvement in PowerX's hardware and software products, and made

recommendations for process improvements.



PHASE TWO: PREPARING FOR SCALE

Following the technical design sprint, we helped prepare the PowerX hardware and software platforms for scale. For the software, we focused on implementing firmware improvements, software best practices, version control, automated testing, and a reconfigured back end infrastructure.

For hardware, we conducted detailed design reviews and prepared the units for FCC Part 15 certification. The Very team also worked closely with PowerX to restructure the software's data science integration, while documenting and implementing best practices and refactoring the flow of the code.

Through all of this, we provided guidance on technical best practices to help PowerX prepare for a rapidly scaling future.

PHASE THREE: NEW FEATURE DEVELOPMENT

Once the software and hardware platforms were ready to scale, we shifted into helping PowerX develop new software and hardware features – empowering them to deliver even more value to their customers while increasing their margins.

Hardware: Staying nimble in face of the chip shortage is critical. We helped PowerX pivot to a new product design and created a new, custom LoRa module to reduce their cost and ensure the supply chain is robust moving forward.

Software: Our engineers worked with PowerX to increase the value of the products for their customers by delivering new app features and fresh insights derived from data science enhancements.



The Results

Improved project management capabilities were one result of our collaboration. We guided PowerX through a move from spreadsheet management to an "implemented-from-scratch" project lifecycle management (PLM) system that automatically organizes data ranging from bills of materials to firmware versions. This improved workflow efficiency translates to thousands of dollars in savings.

Another positive outcome was the blueprint we provided for future successful projects through training and guidance on the best practices needed to scale IoT products. Ultimately, this is what we like to see most – a client empowered to accomplish more on their own once our partnership is complete.

Our goal is to leave clients with the tools they need to move forward without us.



Bill Flaherty Director of Hardware Engineering, Very

Very is the proud partner of the world's boldest innovators. We're on a mission to spark that "a-ha moment" in our clients and to test the boundaries of what was previously

thought possible. If you'd like us to help bring your IoT solution to market, <u>get in touch</u>. We'd love to serve as your trusted technology partner.





Project Team

Tyler Hrycak, Technical Program Manager Mitchel Haan, Back End Engineer Elaad Applebaum, Data Scientist Bill Flaherty, Interim CTO Mike Mehl, Firmware Engineer

