

Devastate the Competition

How to Take Market Share through
Robust Design

AUTHOR

Adam Bahret

CHAPTER 1

The Critical Connection between Reliability and Business Success

Imagine driving your vehicle without a fuel gauge, speedometer, or engine health indicators on the dashboard. You will likely only reach your destination successfully about 70 percent of the time—maybe. Sometimes you might underestimate the fuel level and run out of gas. Another time, the engine might burn out because there was no indicator that you had run out of oil. Perhaps you go too fast, get a ticket, and have your license confiscated. The worst case is that you or someone you care about gets hurt in an accident.

What if you add a muddy windshield that forces you to hang your head out the window to see where you are going? At that point, you're down to about a 50 percent success rate. What if the occupants are fighting over the steering wheel because they all want to drive? That's a 30 percent success rate. This is similar to being in a product development program with no closed-loop feedback on risks in the design (dashboard), no clearly defined goals for robust performance (dirty windshield), and constant conflicts over resources and timeline (everyone fighting for the steering wheel).

The craziest part is yet to come. Imagine reaching your destination, getting out of the car, and noticing dented fenders and blood on the bumper. You have five new speeding tickets, and everyone hates each other. Then everyone hops back in the car and does it again without fixing the systems that are failing them. Sounds crazy, right? Have you ever completed a project, participated in a post-mortem, and started a new project without changing anything? It's crazy. Look at who is winning around you. Are they driving with a working fuel gauge and dashboard, and is their windshield clean? Why isn't your organization changing anything?

Getting the Best of Both Worlds: How to Be Fast and Reliable

How do you develop highly robust, profitable products that go to market fast and build a powerful reputation with customers now (and twenty years from now)?

That question has burned in my mind over the last two decades as an engineer and consultant specializing in developing reliable, robust products. Success in product development is not just about launching a profitable product; it's about building a product that has a lasting impact on clients and customers.

For many executive teams involved in developing and launching new products, the reality falls far short of creating a reliable product that stands the test of time and builds a powerful reputation. Corporations often prioritize fast launches at the expense of robustness and reliability. When the product fails in the field, customers understandably become dissatisfied with its performance, which leads to negative feedback. Some customers may even take their business elsewhere, resulting in a significant decline in your company's revenues.

Can your company protect itself from the financial and PR consequences of such a situation? What are the implications for your employees? Does their morale suffer due to the added complexity and workload associated with recalls? Are your competitors gaining an advantage as your customers seek alternative solutions? What other opportunities does your organization lose while investing time and money in rectifying past mistakes? These are all crucial questions to consider when developing a product for launch. Just one flawed

rollout can potentially devastate a company or significantly impede its competitive position in the marketplace.

What Is a Robust Product?

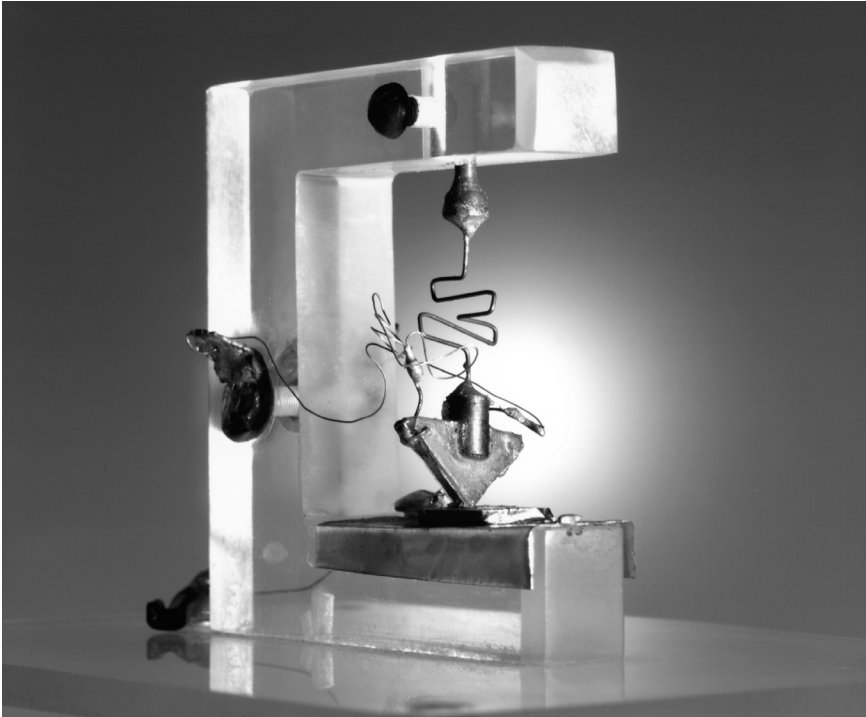


Image: First Transistor |
Photo Credit: Nokia USA Inc. and AT&T Archives 1960

This peculiar-looking object is the first transistor ever made. John Bardeen, Walter Brattain, and William Shockley invented it at Bell Labs in 1947. It marked a groundbreaking achievement and heralded the beginning of the solid-state computer age. Nearly all the electronics in your home and office can trace their origins back to this quirky little invention.

Do you see the distinctive S-shaped curve in the middle? Can you guess what it's made of? Take a closer look, and make a guess. If you said metal, you're technically correct. However, to be more precise, that little S curve is actually a paper clip! But the way it is bent is crucial for its proper functioning.

"Let's ship it to our customers." Hold on a moment, my friend. We wouldn't dream of shipping this just yet. It's far from being a market-ready product. It lacks the robustness of a well-designed device. A slight misalignment in that paper clip S curve would render this transistor useless. Besides, the presence of a paper clip as one of its components screams prototype!

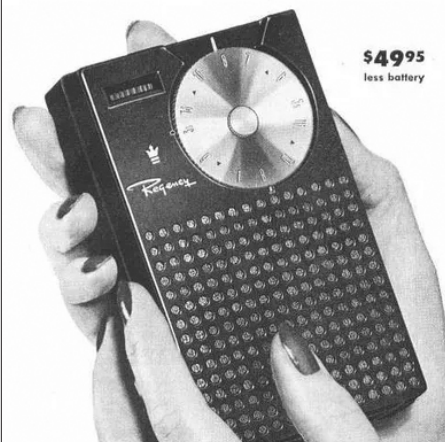
This device merely demonstrates that a function can work—nothing more. You would never dream of sending this to a customer unless you intended to ruin their day.

In 1954, the first transistor radio—the Regency TR-1—was sold to consumers. The significance of this event cannot be overstated. It was similar to the excitement surrounding the release of the first iPhone. Before 1954, radios were bulky pieces of furniture that adorned living rooms. They were literally furniture. Encased in oak and also capable of housing books or displaying porcelain collections, these radios relied on huge vacuum tubes and massive power supplies. Even the lightest radios of the 1940s weighed around 15 pounds. Imagine the astonishment of seeing an advertisement for a product that could achieve the same functionality as those behemoth oak pieces and yet stood a mere five inches tall and three inches wide. It could effortlessly slip into your pocket, just like an iPhone can today.

But for engineers, the real triumph was transforming a fragile invention that was prone to failure with the slightest jolt into a device that could withstand the rough handling of the general public. The TR-1 transistor radio was bound to be tossed onto tables or bumped against furniture while nestled in a jacket pocket or purse. It had to endure and keep working.

WORLD'S FIRST POCKET RADIO

Regency



\$49⁹⁵
less battery

Uses tiny transistors . . . no bulky tubes, combines amazingly compact size, high performance

● First truly personal radio! Weighs only 12 ounces, measures 3" x 5" x 1¼". Slips in pocket or purse, available with leather carrying case. Genuine superheterodyne circuit; astonishingly clear tone . . . through acoustically-baffled speaker or tiny earphone. Shock-resistant, virtually service-free . . . engineered for lifetime performance. Uses standard 22½ V. battery. Smart plastic case in black, ivory, mandarin red, cloud gray, mahogany or olive green. See it! Hear it! Get it!

REGENCY DIVISION, I. D. E. A. INC., INDIANAPOLIS, INDIANA



Goes anywhere . . . plays everywhere!

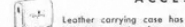


In tune with outdoor living!

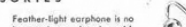


Year's most exciting new gift idea!

ACCESSORIES



Leather carrying case has



Feather-light earphone is so

Image: First Transistor Radio, the Regency TR1 |
Photo Credit: Texas Instruments 1954

The relentless pursuit of creating better products persisted. Every manufacturer aimed to have the best product for the upcoming season. The transistor had become an indispensable part of our lives, permeating every aspect of our imaginations. Following Moore's Law, transistors continually shrank in size, allowing more components to be packed into tighter spaces. However, it wasn't just about size. Transistors also needed to withstand even more conditions

customers subjected them to. Their reliability had made significant strides, as demonstrated in a remarkable event decades later.

Dropping a Bomb on a Game Boy

In 1990, Iraqi dictator Saddam Hussein invaded Kuwait, triggering a military response led by the United States called Operation Desert Storm, which came to be called the Gulf War. Stephan Scoggins, a U.S. Army medic who was part of the coalition forces, had brought his Nintendo Game Boy to Iraq to entertain himself during any down times. He kept the Game Boy inside his barracks.

One unfortunate day, Iraqi forces bombed the US base. Fortunately, there were no human casualties. However, Scoggins' Game Boy suffered significant damage. Amidst the debris, Scoggins retrieved his Game Boy. The casing was scorched, the buttons were melted, and the motherboard was exposed. It was a mere shadow of its former self. The

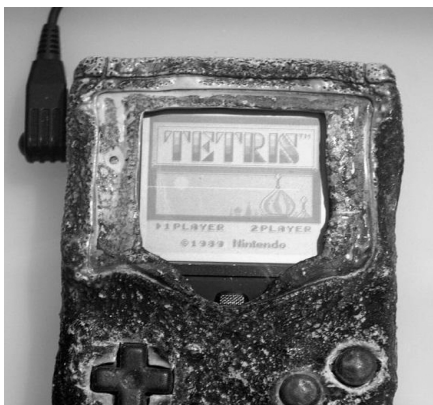


Image: Game Boy That Survived a Gulf War Bombing | Photo Credit: Nintendo Co., Ltd. January 2006

idea of sending it to Nintendo for repair seemed almost comical. Nevertheless, out of curiosity, Scoggins sent it to the technicians. Upon inspecting its condition, they realized there was nothing they could do. However, just to satisfy their curiosity, they inserted a game cartridge (Tetris) into the back, and astonishingly, it worked!

Nintendo sent Scoggins a replacement Game Boy and retained the original bombed and burned console. Remarkably, to this day, that Game Boy continues to function. It is currently showcased at the Nintendo flagship store in Rockefeller Center, New York, with a continuous demo of Tetris playing in a loop.

That is a testament to a truly robust design. The Game Boy was engineered to withstand various stresses and extremes while maintaining functionality. That is precisely what you should want in a product—one that performs exceptionally well under normal conditions and can endure even the harshest environments. It ensures that all customers, regardless of the situations they encounter, have a positive experience with the product. Going from one transistor that had to be carefully setup to work to a device with millions that you can drop a bomb on and still work, that's the evolution of robust design.

In this book, you'll find out how to produce better products that wow your customers. You'll discover how to make them robust, reliable, and still profitable. And these products will devastate the competition! Let's get started. In the next chapter, we'll look at a great recipe for profitable products.