

Innovating Touch: The Strategic Shift in Laptop Design

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Introduction: The Market Shift

In 2011, it seemed like the personal computer (PC) growth trend might be coming to an end, and the industry was getting very anxious. In stark contrast to the previous decade's robust expansion, the worldwide PC market began to decline. Laptop sales, which had surged 3.5 times from 2005 to 2010, began to wane. This slowdown coincided with the explosive entry of Apple's iPad into the market in 2010, capturing consumer imagination and shifting industry focus towards tablet technology. The introduction of the iPad not only catalyzed a shift in consumer preferences but also diverted significant engineering resources and industry attention away from PCs to tablets, which was seen as a potential new dominant form factor. This scenario posed a dual challenge and opportunity for Intel and PC manufacturers who faced the threat of business slowdown against the backdrop of a revolutionary new product. This pivot threatened to further stagnate the traditional laptop segment, prompting industry leaders to rethink their strategies.

Challenges, Opportunity, and Tactics

The rapid ascendancy of the tablet presented an existential threat to the PC market, suggesting that laptops might soon be a relic of the past. At Intel, the PC Client Solutions Division was dedicated to PC innovation. As product marketing director for this division, Gary Richman had a hunch that integrating touch technology into laptops could be a compelling new usage. This was not merely about emulating the iPad but about reinventing the laptop experience itself. The touch technology could make laptops more intuitive and engaging, helping to boost the lagging enthusiasm for the laptop form factor.

However, turning this idea into reality faced considerable obstacles. Adding touch technology would increase the bill of materials by approximately \$100 per unit—even for an expensive \$1,000 laptop with a cost of about \$500, this cost adder was a non-starter for most. Steve Jobs had said in 2010, “Touch surfaces don't want to be vertical.” He said that users who interacted with a vertical touchscreen mounted on a laptop would develop a “gorilla arm” that would quickly grow fatigued. PC manufacturers, retailers, and industry experts were skeptical that there were any compelling usages for a touchscreen on a laptop. The mouse, trackpad, and keyboard were seen as sufficient input devices. PC Original Equipment Manufacturers (OEMs) and their design partners were assigning their best engineering resources to work on tablet projects. For new features to work best, they must be built into the Operating System (OS). Touch was not enabled in Microsoft's Windows 7 OS.

Despite these challenges, the conviction that touchscreens could enhance laptops led to Richman's direction to develop a high-fidelity prototype using an existing touchscreen laptop

with very limited functionality, since touch was not enabled in the Windows OS. So, a shell application was developed that was made to look like a future Windows 8 OS. This application simulated 51 unique OS experiences enabled by touch, crafted to validate this hunch. Funded with a modest budget and developed under the radar in a matter of weeks, this minimum viable product (MVP) was crucial in testing the market's readiness for this innovation.

Given the significant objections to the concept, getting typical quantitative feedback on the prototype would not be sufficient. The proof had to be overwhelming and compelling. It was decided to record video of user interactions with the prototype to capture not only their usage but their emotions when they experienced a touchscreen on a laptop. Prompts were designed to address the common concerns that had been raised – of ergonomics, usage appeal, and preference versus an iPad. Research was conducted in two locations: Chicago, IL and Milan, Italy. Feedback on the prototype was overwhelmingly positive. Users expressed genuine excitement about the touch functionality, challenging the prevailing industry doubts. This enthusiasm was captured in a succinct video presentation, condensing hours of user interactions into compelling evidence of the prototype's success.

Armed with concrete user feedback and a validated prototype, the direction was becoming clear. The touch technology for laptops was not just a feasible idea but a necessary evolution to maintain excitement in an increasingly competitive market. It was an opportunity that had to be captured, but industry obstacles remained.

PC Industry Dynamics and Intel Corporation in the 2000's

In 2010, Intel Central Processing Units (CPU) were an ingredient in more than 80% of PCs. Intel had a vested interest to see the PC industry grow, but it did not design or manufacture the laptops that would end up in users' hands. It relied on an ecosystem of PC OEMs like Dell, HP, and Lenovo to bring Intel CPUs to market. But a great CPU was only as good as its applications and usages. To drive incremental end user demand, Intel employed strategies focused on computing innovation, developing the technology or ecosystem, and creating marketing pull. An example of Intel's previous success with these strategies was the launch of the Intel® Centrino® branded laptop back in 2003.

Intel often developed innovations that would enable new complementary usages for its CPUs and end products, as they did for the Intel® Centrino® brand. Prior to this brand, laptops were great for portability, but not necessarily for accessing the internet on the go, due to the lack of computers with WiFi and locations that allowed users to connect to WiFi. Designing WiFi into laptops themselves was a key innovation. At the same time, Intel understood that consumers would not embrace mobility if it was not a seamless user experience, with many locations to access the Internet via WiFi. So, it tasked a team to work with partners to validate hotspots around the world. Intel invested \$300 million to work with retailers like McDonald's and key locations like airports to establish a network of WiFi hotspots. This was a key infrastructure development activity.

When possible, Intel tried to move the entire ecosystem by getting buyers (PC OEMs) on board by demonstrating compelling value of a technology that had broad end user appeal. This approach was generally successful when the technology was new and hardware-centric, Intel's area of expertise. Intel was more successful when its interests were aligned with Microsoft, its

key partner, as adding features to the OS was the fastest and easiest way to widespread touch adoption. With OEMs, Intel was more successful if the innovation required broad industry enabling or large investments. It was less successful if OEMs perceived the innovation as within their own area of expertise, or enabling a value add that they saw as their differentiator. This explains why enabling WiFi with Intel® Centrino® processors was successful – WiFi was hardware based, not previously broadly available, and a significant industry investment. In 2011, the leading OEMs, HP, Lenovo, Dell, Acer, and Asus, represented 57% of the market (Gartner, 2024). Best Buy was the leading US retailer and another critical piece of the ecosystem. Best Buy could choose which computers to stock on its shelves based on its assessment of end user value.

Intel used brands to connote value to end user products that followed its specifications in order to drive consistency and quality throughout the ecosystem. Intel had promoted CPU brands like the Intel® Pentium® Processor and ‘platform brands’ that received this designation if laptops included features and capabilities beyond the CPU, such as the Intel® Centrino® brand for wireless laptops. Intel launched this brand along with a worldwide marketing program to accelerate the mobile computing concept. In 2011, Intel announced the Ultrabook™ concept. Ultrabooks™ initially represented premium ultrathin light-weight laptops, without compromising battery life or performance. The timing of this marketing initiative was aligned to the touchscreen opportunity.

The Decision

Richman and the broader Intel team understood that unless they rallied the ecosystem, success would not be realized. It was 2011, and time was short. They had to urgently communicate the value of touchscreens for laptops to all the players in their ecosystem: partners, customers, and channels. Were Intel’s research findings in Chicago and Milan globally applicable? What insights had they gained from Intel’s previous successes that could be replicated this time? They evaluated the alternative strategies available and the resources needed to execute them. Microsoft was developing the next version of the OS, Windows 8 for 2012 release, but it did not seem to have plans to enable touch. Even if Microsoft enabled touch, OEMs only had a few months to source touchscreens at competitive prices which would be difficult for each OEM to do individually. OEMs also had to re-engineer their laptop designs to include touch to intercept the launch of Windows 8, a major industry inflection point. Even if the OEMs included touchscreens in their laptops, leading retailers like Best Buy would have to agree to carry them. The entire effort within Intel would be costly in terms of time and money. Intel executives in marketing and sales were now involved, and they had to evaluate the next steps to maximize this opportunity, excite others, drive consistency across the ecosystem, and overcome obstacles.

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