Beyond Features: Welcome to the Age of Intangibles

by Andreas Pfeiffer

Editor's Introduction

This article looks at the constantly evolving landscape of digital devices, and analyzes the growing inefficiency of hardware specifications to properly represent the overall value perceived by the user. Increasingly disruptions in the technology space are carried not so much by hardware aspects, but by intangible value propositions that combine a wide variety of hardware and software specifications.

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In 2013, just after Apple had introduced the iPad mini, Amazon used the homepage of its online store, Amazon.com, for some comparative advertising. It was an attempt to set the recently introduced Kindle Fire HD tablet apart from the much-feared competition. The Kindle Fire HD, a color version of the Kindle reading device, was introduced a few weeks prior by the company's CEO Jeff Bezos with the words: "A year ago we introduced the best tablet at a certain price. Today we are bringing the best tablet at any price."

The key selling points in the comparative ad included an emphasis on technical features, such as: 30% more pixels; 216 pixels per inch compared to 163 pixels per inch; dual stereo speakers compared to mono speaker; and Ultra-fast MIMO WiFi.

This ad unwittingly exposed one of the key problems in how we describe digital devices. Since it is becoming increasingly difficult to communicate the truly meaningful aspects of a device in an objective way, hardware features are often used to distinguish devices, as if what makes a device unique depends on these features.

Introducing the Feature-Value Gap

The futility of describing the value of a digital device though its technical features comes to a head with tablets. Tablets are at a milestone in the history of consumer electronics. They have captured many features of desktop PCs into a lightweight, portable, low-power, wireless artifact. Critics of tablets, noting that the trend toward miniaturization sacrificed familiar features of PCs, called them "devices that have no clear primary use." In fact, some critics panned the iPad when it was announced in early 2010 and predicted it would be a resounding flop. PCs were seen as multi-purpose machines that gave access to a small set of key applications such as Microsoft Office, a web browser, and Photoshop. Many of these familiar applications do not run on tablets. Moreover, the inability to support a hierarchical file system was seen as a major loss by tech savvy users. Because tablets are offered at considerably lower

prices than desktop PCs, there is little incentive for the traditional providers to figure out how to down-scale applications for tablets.

In today's world of ubiquitous technology, we can no longer assume the average user will also have a nerdy attraction to features. In terms of describing user reality, technical specifications have become useless. If you simply compare the hardware specifications of the Kindle Fire HD, iPad, and Microsoft Surface, you would be right to assume that they are near-identical devices—just as different brands of HiFi equipment or digital cameras are similar despite having different manufactures. Yet when you actually use these "near-identical" devices, you realize they deliver on completely different value propositions, and most of all, they are not competitors at all. Not only are the iPad, the Fire HD, and the Surface profoundly different in terms of user experience, they are also targeting completely different potential users.

What does this mean? Simply that features and hardware specifications have ceased to be useful to describe the actual value a user derives from a device. I would like to call this the "feature-value gap" or the difference between the easily measured technical aspects, and the much harder to quantify user experience, value perception, and device universe.

Where does the value come from? Not directly from features of the hardware of software, but from the function available and the overall design. Yet quantifying design in measurable terms is a real challenge.

Quantifying the Seemingly Intangible

The technology industry as a whole might need to move out of its comfort zone when discussing devices. User experience, pleasure of use, and other seemingly intangible aspects are often assumed to be by definition unmeasurable. Yet when you start looking more closely, that is not entirely the case, or shouldn't be. If there is a repeatable perception of a difference, there should also be a way of methodically describing it so that it can be objectively observed and measured.

Over the past decade as a technology researcher I have been repeatedly confronted with aspects of technology that were perceived and assumed to be unmeasurable. And yet with dedication and perseverance, my colleagues and I were able define the right concept to capture and measure the difference. An example is the concept of "user interface friction," discussed in Ubiquity in 2006. With that concept we were able to quantify some of the perceived "intangible" differences between the Mac and Windows computers.

What Next?

Once we let go of the safe haven of hardware specifications, how do we quantify the differences between products? Aren't we necessarily reduced to subjective appreciation of intangible aspects, making what we say no more than a personal opinion?

No, but it can be challenging to define observable and repeatable aspects that can be measured. The first step is to clear our minds of the notion that the value we derive from a digital device is based solely on hardware specifications. Then we can look for repeatable patterns in the user experience, allowing us to quantify some of the aspects that we thought merely subjective.

Is it really that difficult to quantify what we experience when we use a tablet? I think not. Let us look more closely at the cognitive and conceptual environment.

Take just two simple concepts: cognitive load and user experience friction. Applied to a digital device, cognitive load can be defined as the sum of elements you need to learn and get familiar with in order to use the device spontaneously and intuitively. The cognitive load a device imposes on a user can actually be documented quite easily—and once one does, the difference between various devices becomes much clearer. The same is true for user experience friction, or the slow down that occurs when the user experience of a device deviates from the user's expectation, once we have understood and accepted the concept.

Digital devices have become so deeply ingrained in practically every aspect of our everyday existence that we don't think about them as little computers or useful tools. We see them as an increasingly transparent extension of our selves. These devices permit us to do some amazing things with almost no cognitive effort. We can communicate with friends, find old pals from our school days, share photos, avoid traffic jams, get directions, call taxis, and read the morning paper. There seem to be no end to devices that make our lives easier. These are the things we need to measure.

The language of features has outlived its usefulness. The language of functions provided by apps defines the new way of looking for value in digital devices.

Disruption Through Intangibles

Despite their considerable youth, smartphones and tablets have already reached an early majority phase of adoption. The difference between these digital devices and older technologies, however, is a new kind of disruption—disruption through intangibles. If we look

deeper we may realize this type of disruption has actually been going on for years already, although sporadically. So we've consistently underestimated its importance.

What do I mean by disruption through intangibles? The disruption that is driven not by hardware characteristics, but by the intangible value proposition made possible by a combination of hardware features and design aspects. Although the intangible potential is enabled by a host of technical achievements and breakthroughs, these technical aspects have ceased to be of importance to the consumer.

When Apple launched the original iPod, market analysts were not impressed. The market for MP3 players, they argued, was just a small one, a few million units worldwide. Apple's new gadget was dismissed on grounds of its high price and technical inferiority to some competing products. What these analysts failed to realize, and what explained the monumental success of the iPod in the market, is that Apple was not selling an MP3 player. It was selling a stylish way of carrying your world of music in your pocket. The disruption created by the iPod was a disruption of an intangible value proposition. Suddenly, it had become possible to carry a thousand songs in one's pocket. The disruption was enabled by a new, ultra-small hard disk. But no one purchased the iPod because they knew it contained a hard drive. It was Apple's slick industrial design that propelled the iPod to the level of a fashion statement.

For smartphones and tablets, something very similar happened: Smartphones existed before the iPhone, and tablets before the iPad. So why was the iPad disruptive where earlier tablets weren't? Because unlike older devices, the iPhone and iPad did not sell functionality, they sold a promise of potential. They relied as much on the projection of the potential users into what the devices could do for them than on the actual physical reality of the device. And by doing so, they not only inspired potential buyers, more importantly they inspired developers to make this projected potential a reality.

In terms of features, the iPhone was groundbreaking for two reasons: It dared to do away with the keyboard, thus making the full screen surface available for apps; and it pioneered multi-touch interaction on a handheld device. Combined, these two features opened up the potential for app development the way we know it today. Because, in the end, that's what made the iPhone and iPad such a resounding success: The rapidly growing pool of original—and very affordable—apps.

There is little doubt the iPad would not have been the runaway success it was without the iPhone, and, more importantly, the environment of mobile apps that it has inspired. Apps, tiny programs that do a limited number of things very efficiently, have made mobile computing

what it is today. You like hiking? Get the GPS tracking app and get all the details of your hike recorded. Want to read your morning paper? Get your local paper app and read it there. Stuck in a shopping center and can't find your store? Use the map app (and maybe SIRI) and you find your store. Need a taxi? Use the taxi app and one arrives within two minutes.

There is a big change here. Personal computers were bought to use with a small number of relatively expensive programs. Tablets, on the other hand, are purchased for the potential of future apps that we don't even know yet.

One could argue every successful product is sold on a promise as much as it is sold on a functionality, but that would be missing the point. What is important is that increasingly the computing technologies that transform our world do so on the strength not of features, but of an intangible potential. The success of social media certainly has little to do with features, and everything with the promise of super charging each user's social connections. Tablets sell in hundreds of millions not because anybody initially needed them, but because of the promise of hundreds of thousands of affordable apps.

And there is another interesting aspect here. Of course it is apps that make tablets and smartphones what they are. These devices offer a greatly different software environment from PCs. Phone and tablet apps are sold at a fraction of the cost of PC applications; apps are almost always cheap enough to be an impulse buy; and many excellent apps are completely free. Apps are highly usable. While PC users had to learn complete software systems to make the most of them, apps are meant to be self-explanatory and o extend a user's existing practice. Cost and usability have created a climate where users often relentlessly download new apps, constantly trying out new things.

This leads to a high degree of customization of individual devices. No two users will download exactly the same set of apps. Every device is different, fine-tuned to the user's needs through the combination of dozens of little apps. In that sense, these devices are less and less like a computer, and more and more like a person's habitat: We all have the same basic components required in our home, yet no two homes are alike.

Is this what tablets and smartphones are quickly becoming? Our virtual homes, or rather, the homes for our virtual existence? It will be interesting to watch how our relationship to smart devices will evolve over the next 10 or 20 years. But one thing is certain; we have never been more closely connected to technology than today.

We are witnessing the beginning of a revolution. In today's technology landscape, practices evolve faster than our capacity to analyze and gain structural understanding of them. Progress

in computing today relies less on key evolutions in computing power, storage, or network bandwidth, but in the increasingly chaotic interconnection between previously separated things. Right now these connections are still somewhat sporadic, basically limited to the few devices we carry around with us. In the next stage of evolution of the Internet—often called the Internet of Things—more machines will be connected and will form their own new connections. The pace of innovation is not likely to slow down any time soon.

About the Author

Andreas Pfeiffer is a Paris-based technology researcher and analyst who has covered digital technology since the mid-eighties and has published several studies that focus on seemingly intangible aspects of computer technology, such as user interface fraction, the user experience of smartphone operating systems, among many others.

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