To Internet Or Not To Internet

The hidden consequences of online technology

A white paper from Freevolve, LLC

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…Since Sliced Bread

The Internet is labeled, justly, as one of the most important technological developments in modern history. Its reach and impact on every level of society has radically transformed it and improved quality of life in ways both obvious and subtle.

It is no wonder that businesses have tried to take advantage of both the power and popularity of the Internet by increasingly aiming their development efforts toward new products that take advantage of it in some way. Indeed, it can be said that this process has become self-fulfilling to a great extent. With a rich variety of technological solutions and products making use of the Internet becoming ever-more commonplace, developing cycles for new products can be greatly reduced by incorporating such technology as building blocks cheaply and easily. The incentive to design everything from scratch is reduced, even if a particular application may benefit from this approach. Internet-based technology becomes easier and cheaper to produce, helping companies become more competitive by shortening time-to-market requirements and cutting costs. Marketing campaigns touting such products focus, understandably and often exclusively, on their benefits. Other relevant issues that challenge this one-solution-fits-all approach are often pushed aside.

If I Tell You Everything…

The Internet was designed as a means of sharing information. The basic communications protocol at its foundation is flexible and open, allowing easy participation. In the early days, it was associated with a technological "wild west," driven by few rules which were largely self-enforced. Although the Internet survived in its initial form largely intact to this day, significant changes have taken place to deal with the unexpected and artificially created need for an environment that is, at the same time, shared and private.

If this sounds like a conflicting set of requirements, well, it is. A retail business, for example, loves the ability to show its inventory to the whole world at once. In that respect, the Internet couldn't be simple and accessible enough. However, once a customer becomes interested in a purchase, these same attributes become immediately the worst hindrance, as this part of the business transaction has been, and must always be, private.

Can You Keep A Secret?

Patch solutions have been developed on top of this free, shared Internet infrastructure to protect specific areas of communication, such as those related to financial transactions. As a testament to how difficult such a task is, consider the number of "Internet Security" companies that have since sprung up to deal effectively with this issue; or the billions of dollars spent on it. Or, consider the fact that any company that can afford it has a computer network administration group in charge of maintaining the security and privacy of sensitive information that must also be available on the Internet – though, hopefully, only to authorized persons.

It's like sending classified information through a TV ad. Anybody can read it, or worse, record it and play it back at their convenience. Encrypting it helps, of course, as proven by the fact that millions of private transactions take place successfully on the Internet every day. It is by no means a perfect solution, however, as every day we also hear about this or that compromised database. One important part of secrecy will always be limiting access – and this can never be possible on the Internet.

A good conclusion to be drawn from the current state of things is that protecting information over the Internet is difficult, costly, time consuming and requires expert skills. This does not in any way detract from the value of the Internet, as any

company will gladly testify. It is, after all, why every business not only has an online presence, but would defend the right to it unconditionally.

Pay Now, Pay Later

Fine, you say, I understand the challenges faced by a business – but that has nothing to do with me, right? Well, in fact, this issue affects regular people every day, although in ways not immediately obvious.

It is clear that the typical consumer cannot be held responsible for maintaining an Internet-based infrastructure. At the same time, the pressure is on to try and introduce various product ideas to the consumer market that rely on such infrastructure. The solution? A compromise placing the consumer at an often unnecessary and disproportionate disadvantage.

As an example, let us consider a system that allows you to remotely access content provided by security video cameras installed in your home.

First, we begin by considering the cost of such a system. Obviously, there is a hardware aspect: cameras, installation, video feed collection device and Internet router. Then, there is the cost of a high-speed internet connection, which must be present for the system to work properly. In most cases this is not an issue because it is already absorbed by the household. However, this is not always the case – particularly if the property is of a secondary nature (i.e. vacation cabin).

Not immediately obvious is the service cost aspect: the information supplied by this system must be collected somewhere off-site and made available to you through a web-page. The costs of maintaining this web page, updating its content, communicating with the system and keeping its software up-to-date from a security stand-point are lumped together into a "management" or "monitoring" fee that is

incurred for the life of the product. Note also that such service is only needed due to the complexities related to exchanging information over the Internet securely.

As a matter of fact, some companies value this fee-based revenue far more than the sale of the actual hardware itself due to its potential for perpetual profit. In the interest of securing such revenue, the hardware is often offered at a steep discount or even free. If this hardware could be used by multiple companies to provide service, such an offer is then contingent on a specific length of time commitment with the business involved. However, if the system in question is unique, or in other way dependent exclusively on the ability of a single company to provide service, such contractual agreements are unnecessary: if you don't buy the service, your new system will become useless – save for a high-tech conversation piece at parties. This business model is not new, having been perfected many years ago by the phone companies. As a matter of fact, if the above sounds familiar, it is likely because you own a cell phone. However, whereas the phone companies do provide a necessary and arguably valuable service, over-the-Internet product-related services are often only artificial by-products of their own complexity. To use an analogy, it is like buying a car that is so hard to drive you must rent a driver from the car company every time you go out, for as long as you own it.

Playing Telephone… Over The Internet

Recurring costs are, however, only part of the problem with an Internet-based system. No matter how secure a particular setup, the content it provides becomes accessible to at least one other party: the company that manages the system and provides you with access to it. That brings us to the issue of privacy, which is actually part of a bigger problem: ownership. When you buy a product like this, do you really own it? It does not work unless a "ransom"charge is paid each month, and when it does work you're certainly not the one in control.

Going back to our example, imagine that the system also allows you to pan each camera left and right, allowing you to see what is going on in a specific area. How is this feature implemented? Well, you log on to your system website, select the camera of interest and use the controls built into the site to pan it to the desired location. But wait! The website is not directly tied into your system. After all, it exists at a location other than your home, right? So how does your pan request actually make it to your camera? Your management/monitoring company takes the instructions you issued on the website, translates them into actual commands and then moves the specified camera to the desired position. This means you can accomplish the same thing by calling this company and asking them to please pan camera 2 by 30 degrees. Another way to say it is that control of the system belongs to the monitoring company, not you, which brings up a host of other questions… What about unauthorized access? What about unauthorized surveillance? Who supervises the system supervisor, and what assurances do you have in this regard?

It is very difficult to create a system like the one described above without involving the Internet, while having it remain a viable consumer product. So the choice, in this case, truly becomes about whether to use such a system at all, given everything it entails. In many other applications, however, the choice is not as drastic. Viable alternatives often exist and the push for an Internet-based implementation is limited along the lines of the elementary school argument "because everybody else is doing it."

Kindle-y Return My Rights!

The issue of consumer control actually goes far deeper than the immediately apparent "middle man" effect in using such a product. Because you, as the owner, do not have the ability to directly interact with your system, the element of trust that must be extended to the system's manufacturer/supervisor expands much further than otherwise necessary. You must, for example, believe that the system's capabilities are actually limited to what you're being told about. Consider the

scandal over Amazon Inc.'s Kindle electronic book device: the company secretly built the ability to remove content from these devices at will, placing it in a "big brother" position of unconditional control unacceptable to the vast majority of its customers (more so as they were not aware of such intrusive technology at purchase). Along with contractual agreement fine-print allowing it to make use of such capabilities, Amazon Inc. essentially challenges the general understanding of its customers regarding what it means to "purchase" an electronic book, and forcing itself as the continued owner of this content by choosing to view the transaction as a lease – whose terms are, by contract, variable at the company's whim. A comprehensive impact study of such an action is beyond the scope of this paper. For a great in-depth look at the potential implications, read "*Why 2024 Will Be Like Nineteen Eighty-Four: How Amazon's remote deletion of e-books from the Kindle paves the way for book-banning's digital future*" by Slate.com's Farhad Manjoo.

Initially driven by the need to make technology accessible to the consumer, such Internet-based devices have and continue to evolve into the sphere where customers are further and further removed from the ability to use them, are forced to pay endlessly for "access" or "features" they never wanted and where core values such as privacy, ownership and independence are re-interpreted and re-defined to such an extent that, if done at a government level, would be viewed immediately as an ideological attack on the core values we, as Americans, hold sacred.

Home automation systems, as shown above, have been subjected to the Internet onslaught for many years now. Under the pretense of technology that is too difficult to manage or understand, more products arrive on the market each day claiming to "remove" this burden for a hefty price. Quickly re-purposed powerful hardware and services that, essentially, simply relay information and instructions between you, the owner, and your system without adding any value in the process, combine to make such solutions expensive, hard to use and unnecessarily complex.

Such devices are destined for little more than very specialized, niche applications (for example remote video camera feeds) and, with few exceptions, their actual useful value goes little past novelty and entertainment. The hardware complexity inherent to such systems is in contradiction to their use, as their potential is virtually limitless. Privacy, reliability, liability and cost concerns limit such systems to collecting and reporting information because few people would consider implementing critical applications (such as access to the property or temperature control) this way.

Choose Direct Access – And Take Back Control!

What choice is there? From the business side, investing the money spent in increasing system complexity for use over the Internet into re-designs of alternative technologies that are finally appealing, intuitive and easy to use by anyone. From your side, understanding the issue and making a decision based on your needs as opposed to those of the market is paramount. You will finally be able to make technology work for you instead of the other way around.

Modern direct-access, phone-based systems suffer from detrimental historic repute. Traditionally, such products were (and some still are) famous for being awkward and difficult to use, feeding – in essence – the Internet flame. Stacked against these systems is also a market push against "old" or "outdated" traditional phone-line technology. So why consider it?

- **Phone-line technology has the advantage of privacy. A phone call does not broadcast the conversation to anyone else except the intended recipient. Is it any wonder that all home alarm systems use the phone to communicate? Internet systems must remain online 24 hours a day. Phone-based systems only remain connected for the duration of the communication session, minimizing exposure to unwanted access.**

- **Phone line technology has the advantage of reliability. Think about the one thing you remember always working during a storm or power outage: that old land-line corded phone. What is the first thing to drop out under these conditions? Your Internet connection. This is a good place to mention that direct-access, phone-based remote home monitoring systems can warn you of a power failure because they retain the ability to reach you when it happens.**

- **Phone line technology is simple and easy to use. The equipment and level of skill necessary to establish communication with a direct-access, phone-based system is familiar to most people: a phone and the ability to make a phone call. Phone line technology is therefore inherently accessible to everyone.**

The bottom line? While the Internet is an amazingly useful tool, it is not appropriate for every application – in spite of the efforts being made to tout it as such. Basic understanding of the limitations involved will help educated consumers make purchasing decisions that reflect their needs regardless of current techo-fashion trends or external market pressures.

For home automation technology, you may well consider abandoning the Internet in favor of regaining remote access over some longed-for features: detailed functionality, privacy, ownership and control over your expenses.