

From Convergence to Interoperability

By Leo B. Willner, Ph.D. and R. Gregory Kalsow

Is the convergence of the TV, the PC and the telephone necessary or even desirable, and is it about to take place? The most recent National Association of Broadcasters' 2002 show deemed itself "The CONVERGENCE Marketplace," so they certainly looked hip and high on so called 'convergence'. During their show, Marc Andreessen of Loudcloud came to the podium to give the New Media Keynote speech representing a different point of view. Among his challenges to the establishment, Marc uttered a few unexpected words concerning the desirability of convergence. He said: "I believe in divergence not convergence and in the proliferation of products and services." No one applauded.

As a marketing pioneer Andreessen speaks for the consumer, while the NAB is boosting a cause, heralded by engineers and technologists, calling for greater unification and efficiency via

convergence. Yet, when it comes to consumer electronics, it seems a wiser bet to take the consumer's point-of-view than to back a mantra raised by engineers and accountants for integration and uniformity. Thus, our vote is with Andreessen, the imaginative founder of Netscape and

Loudcloud. If convergence, a la the NAB2002 motto, is not the appropriate next goal, then what common direction might take its place? Many believe that interoperability among the various consumer electronic

devices is the right alternative to full convergence of technologies. Herein, we explore some key aspects of this timely question.

To begin with, in a media-centric world, where wordsmithing is part of the profession, words that don't make it are quickly disintermediated or mutated into different forms with altered connotations. For example, think of how the failing-to-gain-traction Interactive TV segment has

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suddenly, as if by magic, come to include such things as VOD. Within this requirement for marketable keywords, what do we truly mean by the term ‘convergence’? According to Webster, things that tend to meet are said to converge. In the simplest sense, watching TV on a PC, or talking as if by telephone via a PC or TV, or doing PC work via a TV would seem to fall into this convergent category in the realm of consumer electronics. Further, in the extreme, a single box that is functionally a PC, a TV and a telephone all in one would represent the ideal of a fully convergent device. Then, to various degrees, everything in between would represent a range from a modicum to an appreciable level of convergence of electronic ‘boxes’ in the home.

Yet, somehow, we still seem to be missing the gist of convergence when we limit our attention to the electronic devices themselves and their workings, while ignoring the broad setting of the home and the behavior of the consumers who dwell therein. For any degree of convergence, however technically operational, can only achieve a useful purpose if it meets the intrinsic requirements of the consuming public.

This, then, is the deeper meaning of true convergence often obscured by various arcane technical considerations? For, in order to succeed with convergence

to any degree, we need to incorporate the role of the consumer, as the ultimate users of electronic devices, into the unification process in order to give it meaning and value. Convergence, from the consumer’s point of view, is limited to his or her ability to grasp and actualize the functions that are common to any combination of home electronic devices. Success depends on his or her ability to achieve a satisfactory experience when using a number of electronic aids in a straightforward, understandable manner that is uniform and consistent throughout.

From the consumer’s point of view, he or she must learn to master and to adapt to an ever-changing family of electronic devices. In order to do so

it is necessary that the pattern of usage and of change be coherent and devoid of discontinuities and unnecessary changes of behavior. Hence, some convergence, or at least interoperability is to a

degree, a practical necessity. Is it also economically or technically practical?

If the user interfaces, or UIs, are inconsistent from device to device, there is little convergence from the consumer point of view, even though, on the inner electronics side, there may be a ‘convergence’ of the systemic means employed. Also, if the buttons and switches, which represent the tactile means of actuating electronic ‘boxes’, vary greatly from one another,

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then convergence is not achieved from the consumer's point of view. Therefore, true convergence represents a reflexive process, which includes the electronic means provided by the manufacturer as well as the perceived behavioral responses of the consumer, involving user interfaces as well as internal electronics.

So what does Andreessen mean when he says that he favors divergence rather than convergence? Certainly he grasps and understands the full meaning and benefits of whatever degree of convergence suits the consumer. Our take is that he is urging us not to throw out the baby with the bath water. We should desire more diversity of products and services as technology allows us to develop and employ more powerful means to improve the work, entertainment and communications aspects of our lives. That comes first. Then, to the degree possible, practical and desirable, we can also begin to harmonize the new with the old and to make them more consistent and easier to use separately and in concert. Interoperability, when possible, is desirable, so let's work to achieve it, while true convergence, as a first goal, is neither practical nor attainable. The only caveat to counterbalance this position is that we must also remember that we have a public that is struggling to cope and already on overload as it seeks to manage ongoing change and master

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each new electronic tool.

Given all of that, are the three primary information-processing technologies of our age: computers, telephones and televisions really about to converge? The popular and the industry press would certainly have us believe that convergence is just over the hill. However, in a world of rapidly changing technology and business models, is true convergence really that compelling for the consumer as well as the services providers? Do consumers want to watch television on their PCs? Do they want to write e-mails from their TVs? And do they want new TV or PC capabilities to emulate telephones? Mr. Andreessen emphasized that they do not.

On the other hand the engineering and technology community is often engaged in a search for the unification and integration of multiple technologies. For example, during the 1950s engineers here and abroad designed and built automobiles that were also fully functional powerboats. They also invented automobiles that had readily attachable wings and could actually fly as airplanes. The unifying idea in both cases was the 'need' for an all-purpose transportation vehicle. Not surprisingly the public chose to totally ignore these strange and perhaps mostly useless contraptions. Convergence without true benefit is but compromise without value.

If the convergence of the TV, the PC and the telephone is not needed, than what, if anything, is required to make these technologies more compatible in the eyes of the consumer? Instead of seeking convergence, perhaps a melding of common concepts into a better workable combination is what the public wants? The purpose of this new quest might be to achieve a better overall user experience, one that offers more than a modicum of uniformity and consistency while also providing an overall enhanced ease of use and convenience. Say an interoperability of working modes among these technologies directed toward achieving some degree of harmonious balance among devices and systems. The objective of such a process would be to enhance learning, adaptation, recall and empowerment of the consumer when employing a combination of PCs, TVs and telephones.

Whether the means to bring services into the home is based on fiber optic or copper cables carrying telephony, TV and data (Internet) all at once or on a wireless system there is a natural urge on the part of providers to use common equipment that can handle any of these forms. Therein, in our view, lies the primary drive for convergence as we find it today, emanating from a technical demand independent of consumer wants or needs.

“Of course we must never ignore tendencies that emanate from powerful market forces...”

The resulting combination of devices is not necessarily embodied in an all-in-one box or device or other simplistic combination. Instead, all the necessary functionality may be contained in a more convenient combination of somewhat compatible and integrated products. Products the individual consumer can utilize with a higher degree of satisfaction when employing his or her PC, TV and telephone alone or in combination. This could result in a consumer experience that also helps them migrate to new devices, products and services as they become available. Here the idea of the home gateway and the home network seem ready to gain currency. Another example is the migration of PC operating systems into a more consistent pattern of symbols and devices.

The net upshot could be a confluence of sorts among communication and entertainment products to allow them to work together better as though functioning under a consistent set of rules. In this scenario ‘interoperability’ in lieu of ‘convergence’ might better describe the approach to enhancing customer satisfaction while also satisfying the requirements of services providers. The current view of targeting the full convergence of PCs, TVs and telephones within the next few years appears unrealistic. In a wireless home, or wired networked home, the

mobile consumer may wish to go seamlessly from device to device as his or her needs require. Thus Andreessen is urging us not to kill the goose that lays the golden eggs by imposing arbitrary convergence rules; at the same time he does not urge us to ignore the practical needs of the consumer.

Of course we must never ignore tendencies that emanate from powerful market forces that drive economic and technological benefit. In the short term, such elements tend to tip the balance in favor of the status quo and favor established standards. In the longer term these same forces can drive the consumer electronics industry toward some degree of low-cost uniformity and convergence. Sunk investment is one such force, brand value another, intellectual property a third and rapid technological change — perhaps the most pervasive of all. In the short term, these forces tend to resist uniformity, consistency and certainly convergence as they strive for the maximization of wealth, power and resiliency within self-protecting economic entities. No convergence or confluence is necessarily sought here until it actually improves the bottom line and helps to protect entrenched commercial positions in the marketplace.

The aforementioned private-interest-driven marketing strategy can act as a

barrier to consumers deploying multiple compatible devices within their home setting or environment. The consumer may be looking for a set of electronic tools that will work well together, while the producers of separate devices may seek to maintain unique characteristics that operate under differing standards. In such cases, producers may argue that to do otherwise would increase their costs while lowering product effectiveness and thereby decrease value for them and their customers. Both parties make a point. Were overall technological change to slow down, a common solution that meets both sets of objectives might be in the offing. In today's world, seeking to satisfy both of these masters to an equivalent degree can simply result in the slowing down of real progress. Thus true convergence and combined product solutions may not represent a valid option for consumers or producers.

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The public generally prefers to choose a family of products and appliances that are easy to understand, that are convenient and trouble free, and that are consistent with past models. For example, most homes have a separate washer and dryer in their laundry room. Only in locations where space is truly critical are these two functions housed in a single washer-dryer ‘box’. This is the consumer preference even though a single combined unit washer-drier may be considerably cheaper than

most combinations of laundry ‘boxes’. Interoperability is another matter, i.e., a washer and a drier that work together to solve the homemaker’s needs is what is called for, and the buttons and switches should operate in a similar and consistent manner.

Examples abound to demonstrate the choice that consumers prefer to make in order to gain a distinction with a difference when electing two ‘boxes’ instead of one to house two different functions or services. Consider another example, the TV-Radio combination unit that can be found in many hotel rooms. This integrated ‘box’ is seldom found in the home although individual TVs and radios are commonly found in the same room. Here too, from a cost and functionality point of view, one can certainly make valid arguments in favor of a combination TV-Radio. Yet this approach does not satisfy the consumer, as it is not what the consumer has demonstrated he wants. Time and time again, the consumer has ignored so-called engineering solutions that seek to unify multiple functions; and, instead, to opt for multiple separate ‘boxes’. It is also important to note that oftentimes such a consumer preference does not correspond to his most economic or efficacious choice.

Yet another example can be found in home stereo systems preferences where a similar pattern of behavior can be

observed. When given a choice, the consumer often chooses several ‘boxes’ over one. Where cost and space are the primary concern, a combined music box that includes a radio, a CD and a cassette player is indeed to be found. But, in the majority of media rooms in more affluent homes the opposite is generally the case. What you typically find is a combination of ‘boxes’, say a tuner-amplifier, perhaps a preamp, also a cassette deck, a CD player, a phonograph and other devices plus a set of external speakers. And to make matters more enigmatic, the various boxes often have different manufacturers. This is also not the economic of efficacious solution, but it fits very well in a world of rapidly changing technologies and operating standards.

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How is this to be explained and how does this ‘common’ phenomenon relate to the so-called coming convergence of the TV, the PC and the telephone? The technicians would have us believe that a one ‘box’ world is best. And, from their point of view, it is best. It is, after all, the low cost solution that maximizes physical factors and minimizes cost. It is easy to forget the wishes, preferences and human needs of the public and to favor mechanistic solutions. It is also easy to ignore the rational, emotional, psychological and atavistic factors that drive individual choice, to forget to ask the consumers what they wanted.

However, they, the consumers, have shown that they do not want centrally planned anything of any sort, particularly when it comes to home entertainment and communications devices. Thus, like Andreessen, the consumer does not typically want a one-box solution, nor does he seek total convergence. He just wants what he wants.

The overall conclusion to this inquiry into convergence and simple one-box solutions is now perhaps self-evident: during a period of very rapid innovation and technological change, an open standard, non-converging, multi-solution flexible model may be best. The consumer knows this intrinsically, and so he prefers a multiple box solution; a solution that does not focus on engineering optimizations of one sort or another, but which, instead, maximizes his own peculiar and changing set of values. This solution is likely to include, at best, only a limited degree of convergence and common standards among TVs, PCs and telephones. It is also most likely to involve a number of 'boxes' each tailored to satisfy one or more needs, wishes or desires of the ever-fickle consumer.

There now appears to be the makings of a rising tide toward home networking, the home gateway and even the idea of the home server. If so, some combination of these new devices may soon gain traction and

currency in the modern home. These unifying technologies may represent the means of achieving true interoperability on behalf of the needs of the consumer as well as the electronics industry. It all suggests that where the home user is involved and has a say, there will be a compromise struck between so-called efficiency and human needs and values.

In today's reasonably efficient high-tech business world the overall market must be allowed to set the direction, not simply the interests of the few best entrenched and most powerful companies. The key idea influencing a suitable level of convergence and interoperability is the reflexive role of the consumer. Via reflexivity the consumer weighs in on the practical choices available to technologists, consumer electronic companies and their suppliers.

Because of this reflexivity factor, it is our view that interoperability — not convergence, will help drive new consumer products and services — and offer commercial success to those companies that lead the way

in this direction.

The gist of Andreessen's remarks at NAB2002 ring true: "a 'spork' is not a spoon, and not a fork."

But you still have to eat. [Ed.]

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