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## TRENDS

### WIRELESS (WHO'S ON FIRST?)

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How hard can it be for the technology industry to agree on a way to let you throw your computer cables away? The answer, as anyone who knows what the names "BlueTooth" and "Wi-Fi" mean, is "Plenty." Scores of companies have invested millions of dollars, years of development efforts, and vast promotional energy into creating the wireless standards that bear these names, and in trying to convince the world that one or the other is the one true path to wireless local area network (WLAN) nirvana.

The more intriguing questions, however, are: "Does it have to be like this?" and "Does anyone benefit from competition among overlapping technical solutions?" In days gone by, the answers usually would have been "Yes" to the first, and "No" to the second. Today, the answer to the first question may still be "Yes," but with the advent of Open Standards, the answer to the second is more likely to be "Yes" as well.

For those who may still have only a fuzzy idea what BlueTooth and Wi-Fi relate to, the following may serve as a brief introduction. Both terms relate to technical design specifications that are intended to allow computers to communicate with other computers and peripheral equipment without connecting cables. Each permits wireless communication over a comparatively short distance (about 30 feet, in the case of Bluetooth, and up to 300 feet, in the case of Wi-Fi - but repeaters can extend the wireless reach of both). Each seeks to adequately address security issues. Each is commercially available (although to varying degrees). And each can be used (at least, according to their more ardent supporters) in many of the same basic situations. One might ask "so what?" until one recalls the names of two other, once competing standards: VHS and Betamax. For while those two video formats battled for supremacy, everyone in the value chain (end users, movie distributors, video rental shops, and so on) suffered from the costs, uncertainty and inconvenience of a dual standard industry.

The fact of the matter is that for many intents and purposes, the marketplace is worse off, and not better off, having two different standards - at least, if that condition persists during the process of widespread commercial adoption. Consider this: an employer today can elect to deploy equipment built to the BlueTooth standard throughout an office environment with favorable results. But with the continuing success of Wi-Fi supporters in boosting the rapid growth of Wi-Fi based "Hot Spots," how will a worker hunkered down at a Starbucks connect to the office network, unless her laptop has been equipped (at extra cost) to handle a Wi-Fi signal as well?

As if this were not bad enough, there are more than two standards to choose among, and the situation in some respects seems to be going sideways. True, the HomeRF standard (yet a third WLAN standard contender) has fallen by the wayside (see: [HomeRF Working Group Disbands](#), below). But at the same time, the Wi-Fi camp itself has produced multiple standards, some of which (rather incredibly) are not compatible with each other (see [Market Uncertain Whether to Embrace 802.11a Wi-Fi Standard](#)).

How we came to this pass is instructive, as is a comparison to what the industry endured before the VHS format vanquished the competing Betamax standard. Equally instructive, however, are the differences, because the standards world has evolved markedly from 1975 - the year in which Sony announced Betamax, offering it to the industry as a proprietary "de facto" standard. To this day, the Betamax format is still widely regarded as the better technology - and yet it was the Betamax solution that disappeared from the marketplace. Many consumers with long memories still regret the money they spent on a Betamax-based machine that ultimately proved to be worthless. Has anything changed which will help avoid the same fate for wireless?

Happily, the answer is "yes," in large part because of the intervening rise of open standards. A quarter century ago, the concept of offering valuable technology without royalties as the basis for an open standard was as unheard of as would an announcement today by Microsoft that it would give the Windows source code to a standards consortium. True, Sony offered to license manufacturing rights to its Betamax technology to many companies in the 1970s (including JVC, which one year later released its first video recorder based on its own, ultimately victorious VHS format). But both Sony and JVC were seeking to reap the huge royalty income that the predominant format would command, and each was willing to pour huge sums into the battle in an effort to emerge victorious.

In contrast, BlueTooth and Wi-Fi have had far different origins. In the case of the more entertainingly named BlueTooth (the standard recalls Harald BlueTooth, a Danish king who united the Scandinavian countries in the tenth century), the technology was contributed by Ericsson, its owner, to a consortium of nine "promoter" companies which included its largest competitors (the eight companies, besides Ericsson, were Nokia, Motorola, Toshiba, 3Com, IBM, Intel, Lucent and Microsoft). Why? Because early on, Ericsson realized that unless its competitors adopted the standard, Ericsson itself would be unlikely to reap any benefit from its new technology. If its competitors also adopted BlueTooth, then Ericsson could open a new product market, and make a safe strategic decision in building products to the BlueTooth standard. Or so they hoped.

Given the size of the prize, however, others were soon at work on short range wireless standards based on other technology, including what came to be known as 802.11b, or, in the popular press, the more easily remembered "Wi-Fi." Wi-Fi is even more "open" than BlueTooth, in a sense, as it is under the control of the Institute of Electrical and Electronics Engineers (IEEE) process, along with a series of related standards (802.11a and 802.11g) and supporting specifications (e.g., 802.1x, which is designed to enhance WLAN security). In the last six months, Wi-Fi has made huge progress in penetrating the consumer's consciousness, with many 2002 holiday ads for home servers touting their Wi-Fi compliance. The drumbeat of endorsement has continued into the New Year, with well-known consumer chains (like Starbucks) installing Wi-Fi service to attract and hold customers. Additionally, Wi-Fi enjoys the support of a second consortium - the Wi-Fi Alliance (<http://www.wi-fi.org/OpenSection/index.asp>), which certifies product compliance with Wi-Fi standards, and recently announced a branding program to certify that participating Wi-Fi "Hot Spots" meet high standards (see: [Wi-Fi "Hot Spot" Seal of Approval Program Launched to Identify Compliant Sites](#)).

But notwithstanding these promotional efforts, the outcome is likely to be better for today's wireless consumers than their hapless, Betamax purchasing parents. The crucial difference is the open ownership of the technology that underlies each of the standards. Because that technology is available to all, there is no reason why companies cannot evaluate and drive the further development of each standard to the maximum extent - and indeed, that is exactly what is occurring. Further, the same companies can ensure that each standard can be deployed in a way that makes it most practical and economical for devices based on each standard to be combined in the same systems. It also means that it may be politically easier for each standard to be tailored for those applications for which it is most suited.

The ability of every company to be involved in each standard at a modest cost also means that no company needs to presumptively work for the success of one standard, and against the success of the other, since it can remain up to speed and in the picture as to the prospects of each process, and make its own strategic decisions in real time, based on full knowledge.

Finally, it is more likely that the "best" technology will win, than was the case with the video format wars. Of course, competition and the quest for commercial advantage will drive the final implementation decisions of every player. And, it would be naive and misleading to suggest that camps of companies do not form around competing standards, seeking to gain commercial advantage by backing the right technical horse. But with many companies controlling the outcome, rather than a single proprietary technology owner, it is less likely that quality will need to take a back seat to competitive positioning.

As of this writing, there are some analysts who find it quite likely that each standard will find a home in the industry, with each addressing somewhat different needs. Indeed, our imaginary road warrior refueling at the local Starbucks today can carry an Apple laptop which is dual-enabled out of the box, and take that capability for granted - as well as the open standards process that helped lead to that result.

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