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The Convergence of Communication Technologies

Where do you go to do library research? When I was a student, people went to a physical building appropriately named a library. A separate building at my college housed the most powerful computer on campus that all faculty and research students shared. What my generation did in libraries and computer centers, today's students now do on personal computing devices—some small enough to fit into the palm of your hand and store in your pocket.

Today's semiconductor advances are doing more than keeping you out of libraries and computer centers. The digital age is causing all past communication systems to converge. All around you, what were once separate technologies are now converging toward the point where they will eventually all be created and accessed through the use of a plethora of new, ever more powerful, digital devices.

Since convergence is still an act in progress, we still have books, magazines, newspapers, and billboards printed on paper. To a degree, nondigital-based communication systems will probably never fully go away; their percentage of use, their significance, will just continue to fall. For example all new TVs have digital tuners. However, some people will continue to watch TV on their old analog TV sets, perhaps for decades, even though U.S. federal law required broadcasters to switch to digital back on June 12, 2009. Old analog TVs will continue to work indefinitely, because a cable provider or set-top box on the TV is converting digital TV signals into analog signals.

Kodak invented the digital camera—and its invention eventually destroyed its film manufacturing and processing empire. I am reasonably certain that the camera that you now use to create your photos and videos doesn't use film. The motion picture industry is also shifting to digital recording, and, as a result, to show Hollywood-produced movies most local theatres are replacing their film projectors with digital projectors.

The convergence of the different communication technologies is happening because all methods of communication, whether ink on paper or analog signals through wires or air, are now being created using digital equipment and digital-based processes. However, for communication technologies to complete the convergence process, you need to be able to experience all the different forms of communication on the same device.

The stampede to bring us devices that can do it all has begun. To quote David Watkins, from Futuresource Consulting, "our [2010] analysis shows consumer usage growing as connected TV devices become increasingly versatile and the range of content, applications and major web brands available on CE [consumer electronics] platforms increases." (See Fig. 1.) For many analysts in the consumer electronics field, the question is not if broadband TV will replace cable and satellite service, but when.

The almost perfect stand-alone convergence digital device already exists. It allows its user to read books and newspapers, check sports scores, listen to a private music collection, listen to the radio, watch TV shows, watch movies, get turn-by-turn driving directions, receive up-to-the minute weather reports, send and receive notes, record conversations, write reports, have video chats, and even make phone calls. The smartphone and tablet computer are both fantastic convergence devices and new competition will speed up their evolution.

The metamorphosis of the cell phone into the most

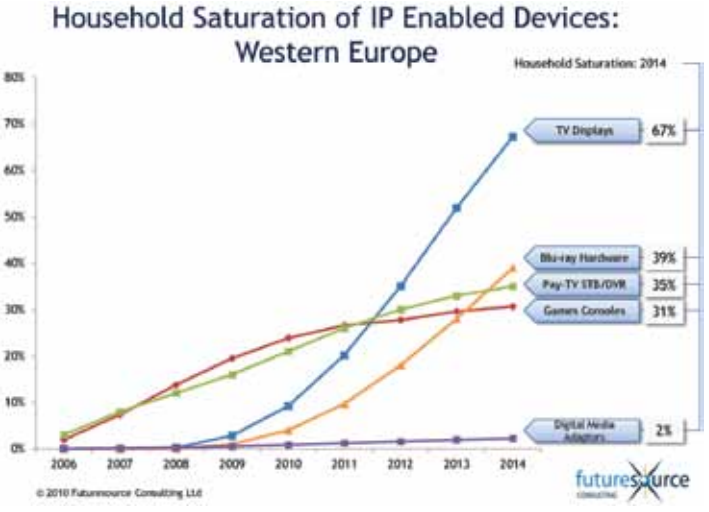

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Fig. 1—Digital TV sales are skyrocketing. The number in use will soon reach a tipping point where it will become profitable for service providers to entice owners to take on new broadband TV connections. Then people will be able to experience on their TVs the same level of communication connectivity that they can now enjoy on their smartphones.

powerful communication convergence device began in earnest in 2007 when Apple introduced the first iPhone. It took quite a bit of time for other cell phone manufacturers to finally develop competitive products. The smartphone and tablet wars are just beginning. In the 1980s, a similar competition took place between Microsoft and Apple, which battled over who would dominate the personal computer market. This time it is Apple vs. Google

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over whose operating system—Apple OS vs. Google Android—will dominate the smartphone and tablet market.

For consumers this competition is a win-win situation because it will keep product and apps (downloadable applications) costs down and the flow of new models up. Just as in the 1980s, this battle pits many different manufacturers making many different products against the products designed and built by Apple.

When I was testing and comparing the Samsung Fascinate Galaxy S smartphone to the Apple iPhone, I came to the conclusion that the significance of these two phones, and the tablet computers that they gave rise to, is the fact that they let you experience all the different forms of communication on one device. Which cell phone or tablet is better is open to debate, and most likely they will continue to leapfrog each other as new models come out.

Samsung does include in its current models some features you don't find on Apple products. The Galaxy S Fascinate has 32 GB of expandable memory (removable micro SD card), supports Adobe Flash, and has a built-in FM tuner. The Galaxy Tab has the following features not found on an iPad: twice the RAM, multitasking, front and back cameras, and a speakerphone with Bluetooth, as well as supporting 32 GB of interchangeable storage.

It is, however, what these new smartphone and tablets let you experience in one device that makes them significant for this column.

The Samsung Galaxy Tab (right) and the Fascinate Galaxy S (below)

Samsung

Recalling the Facts

1. Describe how the different communications systems are converging.

2. If you were designing a new communication device, what features would you include in your product?