

# Standards: What Place Do They Serve in the Consumer Electronics Marketplace?

By William Lumpkins

As the IEEE Consumer Electronics Standards chair, I am often asked, “Why do we even need standards in the consumer electronics marketplace? Do consumer electronics (CE) companies need to be unique in their product offerings and thus be able to outshine their competitors?” The answer is yes and no. Companies want to distinguish themselves with their value add, whether this is a special look and feel of the product or a new twist on the product function. But they do not want to reinvent the wheel when it comes to common interfaces that their product would interact with other customers products in the total ecosystem. [Ecosystem in this sense is the useful whole of a consumer products interaction with other products, like a television (TV) (display device) with a Blu-ray player (Renderer) and a speaker system (audio system). A Blu-ray player by itself doesn’t really do anything without the display device and the audio system.]

## YOUR PRODUCT DOESN’T WORK ...

Basically, the underlying technologies that allow interoperability with the customers’ other purchases must still be intact and functional with a high level of probable interaction. The rule of thumb in the customer’s mind for determining which customer service

department to report a problem to is whichever product costs the most, whether it is the display device or the renderer. This is the customer service department the customer will call. They will call that support center with questions on why their new purchase doesn’t work with the higher-priced product. Now, the higher-priced product has to try to solve the customer’s issues, even though it (the customer service center) feels that its own product is not causing the problem. Remember that old adage—the customer is always right...



Companies want to distinguish themselves with their value add, whether this is a special look and feel of the product or a new twist on the product function.

In the beginning of the “consumer electronics experience,” companies such as Atari or Sony would release a consumer electronic product that relied solely on a proprietary ecosystem of products like a video game console or system. This system would consist of a display device, an input device, some sort of storage device, and a central processing unit.

Video game consoles needed to connect to a display device such as a Magnavox or Radio Corporation of America (RCA) TV. The video interface was called RCA. It was an open (easily accessible) industry specification that was created by the RCA Corporation originally for audio systems but was morphed into carrying video signals as well. For many years, there was no standard for the color coding used in its marking, although many did adhere to a commonly agreed upon color scheme. [Many years later, the CE Association (CEA) did standardize the color-coding scheme with CEA/CEDIA-863-B (American National Standards Institute)]

The input device was Atari-designed joysticks, a variable axis controller with a vertical pole covered in soft rubber for player user interaction. (Ralph H. Baer, inventor of TV video games and the Magnavox Odyssey console, released in 1972, created the first video game joysticks in 1967.) The joystick interface was a proprietary interface (meaning an Atari specified interface). The video game console had a game-storage interface for game cartridges, which contained the (program code for games such as Pac-Man). The latter was originally developed by NAMCO limited and licensed by Midway Games or Black-Jack (programmed by Bob Whitehead), which is a part of the original list of nine games that Atari initially

released with the Atari 2600 (Figure 1). The Atari 2600 was an initial success with an energetic marketing push, but it quickly lost its market share or players due to the lack of game titles (Figure 2).

### PROPRIETARY SYSTEMS AND LICENSING

Before the marketing release of Atari 2600, Atari game developers knew that they could not develop all the games that they needed for a successful game system; thus, they approached a selected group of well-known game developers to license their proprietary game interface technology and to mandate the look and feel of the game engine for further game title development. At the same time other developers not in the select group would have to wait for the game systems to hit the shelves to reverse engineer the system to create nonlicensed game cartridges. These are mostly sold in non-English speaking countries such as China or Hong Kong. As the popularity of these nonlicensed games took off, Atari finally decided to change their licensing policies and make it easier for nontraditional developers to create Atari material. Overall, the speed of execution was slower than needed as other games systems came online with better graphics, faster game code execution, and more exotic game titles pushing the Atari 2600 out of the marketplace.

This slow realization of the disadvantages of closed or proprietary systems effecting the development of a successful ecosystem for a product's sustained life and acceptance in the consumer marketplace was the likely cause of the demise of the Atari 2600 and other proprietary gaming systems. This has led many engineers and scientist to the conclusion that the proprietary system may be the way for a corporation to retain control but an open system is the way to ensure an

extended life cycle and faster market growth for a good idea. Thus standards were born.

### OPEN SOFTWARE FIGHTS BACK

As the field of games systems develop, the new mantra (“do not reinvent the wheel”) uses the technologies we have and tweaks them for a new look and feel to attract consumers with a large release of cool game titles. This was the Microsoft Xbox approach, and they basically used a small computer in a box, with universal serial bus



**FIGURE 1.** From its release in 1977 until 1983, the Atari 2600 was officially called the video computer system, in response to Fairchild Semiconductor's Video Entertainment System. The console was later renamed after its model number, CX2600. Atari 2600 Tear Down: <http://www.ifixit.com/TearDown/Atari-2600-TearDown/3541/1> and [www.ifixit.com](http://www.ifixit.com).

(USB) as the interface to the game controllers, though they changed the open industry standard interface of the USB connection to a proprietary interface. It contained readily accessible internal storage components, such as a hard drive and a DVD player (all with their own set of industry standards), to help differentiate between a standard computer and game system, and they use a proprietary format system for the hard drive so that the hard drives could not be swapped easily. They changed the external audio and

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video (A/V) interface from the box going to the TV as the standard RCA cable interface. In theory, this is to control the workmanship of the cables to ensure that the customer uses only Microsoft Xbox A/V to RCA cables.

As with all things, a renegade group of game developers reversed engineered the Xbox user interface, and thus the Xbox Media Center (XBMC) movement was born.

The XBMC team found ways to enhance the Xbox to allow Microsoft games to be played on it; it found a way around the DVD region limitations to view DVDs from regions other than should be allowed, for example, a U.S. DVD player would be able to play a Polish DVD movie on the Xbox. They found ways to allow external network-attached storage to be used to store videos, TV shows, legally backed-up games, music, and pictures. The XMBC has further moved beyond the Xbox to other platforms like the APPLE TV, and I hear the Samsung Galaxy Tablet may soon be on the way.

In this way, standards are a defined agreed-upon set of rules determined by a majority of industry and individuals to agree on standard protocols or ways of doing something so that companies can focus on the defining qualities that make their products stand out from the rest on the market but also allow all the products to interoperate with each other allowing for a continued growth of the CE ecosystem.

### WHAT DOES LICENSING BUY YOU?

In an earlier discussion of Xbox being used by the XBMC team to

allow other uses of the Microsoft Xbox system, besides what was originally intended for playing Microsoft-authorized games, the topic of music, videos, and pictures arises. This leads into the question, “really, music, video, and pictures, I thought this was called piracy?”

The real question is when I purchase something like a video on a DVD or CD full of music, do I get to use the contents in any form or am I limited to the form that I purchased it in?

My parents purchased a great record (some of you may need to Google the words “vinyl record” to understand what I mean) called “Sgt. Pepper’s Lonely Hearts Club Band” written by Paul McCartney of the The Beatles. When my parents purchased this album, they assumed that they would be able to listen to it forever. However, as technologies developed, the record player went the way of the dinosaur (a really big reptile-like Godzilla). My parents still have the record, but do they have the right to change the media format to continue enjoying the songs on the



FIGURE 2. A video game console.

album or is it a necessity to repurchase the song on every form of media that may come out in the future?



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This is the million-dollar question or multimillion-dollar question depending on the size of the lawsuit with the Recording Industry Associa-

tion of America (RIAA). The RIAA at the behest of the four largest music recording labels routinely seek to sue those that it sees as breaking the infringement law on this very idea.

I think most people would agree that if a person creates an original song or item and that if someone else wants to use it, they should be paid for it, but I suppose the question is when do the payments end?

Am I paying for the content or for the mode of expression? And what happens if I want to share this content? If I buy a book or record I can share that book or record—why should digital content be any different from that book or record?

The following article by Paul Sweazey, the chair of the IEEE P1817 working group, is looking at this very concept in “Toward Consumer-Ownable Digital Personal Property.” Read his article and send your comments to me at [xillia@ieee.org](mailto:xillia@ieee.org). We would like to know your perceptions on this hot topic.



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