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Television Joins the Internet

Television is a very interesting and constantly evolving consumer product. For the most part, changes to the technology have been evolutionary rather than revolutionary in nature. Over time, television went from black-and-white to color, from fuzzy images to super sharp high-definition images, and from small screens in very large, heavy cabinets to relatively light, giant screens that you can hang on your wall. Even the way the signal is transmitted from the television studios to your home has changed, having gone from an analog signal to a digital signal.

Television programming since the earliest days of the medium has always been provided by networks that are funded by revenue from the placement of advertisements in their broadcasts. In many locations throughout the U.S., all you still need to receive CBS, NBC, and the other major networks is a digital TV or a converter box for your analog TV and a simple set of rabbit ears or a more powerful rooftop antenna.

To receive a much broader range of shows, many viewers have turned to pay-for-service providers. A 2009 Consumer Electronics Association report indicates that cable TV, Verizon Fios, and satellite TV now deliver the programs that 90% of Americans watch on their TV sets. The other 10% still rely on their own home antennas, perhaps supplemented with DVD content, or they acquire their TV content through an Internet connection.

Old media newspapers and magazines have been under Internet attack for some time now. Many of these publications have folded when subscribers canceled their subscriptions and replaced print content with Internet content. And the question now is: Will television become the next media giant to be usurped by the Internet?

Television manufacturers see an Internet connection as an evolutionary change that they need to embrace. Many new TV models now come with built-in modules that allow viewers to easily stream Internet content from their home broadband wired or wireless network.

Today, many companies hope to bring about an Internet TV revolution through set-top boxes that can deliver Internet programming. You can join what might actually turn into a revolutionary new approach to TV broadcasting by purchasing a set-top box. You might just need a software upgrade for your current game machine, Tivo, or other set-top box. The newest models of Xbox 360, Nintendo Wii, and Blue-Ray digital disk

players all now offer a portal connection to Internet TV.

A TV Internet link from Roku, Sezmi, Boxee, Neuros, Vudu, your game machine, or other portal device is not the same as purchasing the next generation digital video recorder. Each of these set-top boxes is designed to bring a different Internet experience to your TV. Not one of them, at the present time, can give you an on-demand regular network TV experience.

Every recent consumer electronics press event has included representatives from companies showing their software or hardware route to the "IPTV" Internet revolution. I

wasn't impressed with watching TV through an Internet connection until I received a set-top box from Roku. I first connected the unit to an old 27" analog TV, and the video that the unit streamed was outstanding. I then tested its wireless capabilities to see how it would stream video to my HDTV, and again the video quality was supreme.

The hardware in Roku was developed by an engineering team at Netflix. However, just before the unit would have gone on sale as the Netflix TV Player, it was spun off into an independent company named Roku (www.roku.com). All Netflix subscribers are now entitled to a free sign-up at the Netflix website for unlimited streaming of videos to their Roku player and/or their

computer. The Roku player is also a portal to Amazon Video on Demand and on-demand Major League Baseball. My Roku press contact has indicated that Roku will announce a number of other new portals at the January 2010 Consumer Electronics Show in Las Vegas. So by the

time you read this column, the Roku website should contain all pertinent details.

The Roku player, in principle, is capable of streaming every DVD, TV show, and video clip that is legally available at Netflix or other websites. This can't happen until the television networks, Hollywood studios, and other Internet video providers develop fair-use agreements that include the financial benefits each party requires to share their prod-

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The Roku opening screen includes icons for all available channels. The remote was used to highlight the Major League Baseball channel. To watch this channel, you need to pay membership fees.

ucts. This is the Achilles heel of the system that Netflix and all the other set-top box manufacturers need to solve.

It only takes a few simple steps to set up a Roku or other Internet portal box to your TV. You connect a cable between the set-top box and your TV and then establish a wired or wireless Ethernet connection between the unit and your Internet router.

For the Roku Netflix connection, you go to the Netflix website on your computer and sign up for video streaming. You place DVDs and TV shows that are marked "Play Now" into your "Watch Instantly" queue, and they will instantly appear on your TV's Netflix homepage. The Roku TV remote will now scroll through all of these shows so you can start watching them whenever you want. The remote lets you pause, go back, go forward, or erase the videos you placed in your queue. Your paused position is remembered so you can move back and forth between many different shows. At



When you click on the Roku Netflix channel, each movie or TV show in your "Watch Instantly" queue will appear as a thumbnail image on your screen. This is a free service to Netflix members.

present, Netflix DVDs and TV shows are streamed without commercials.

Roku is a partial gateway to Internet TV. For an Internet TV revolution you need a set-top box that will deliver Roku quality, mainstream programming and also let you decide

which other websites you want to access on your TV. When TVs can draw content from the entire Internet, many independent film producers, with high-quality low-budget productions, will establish a beach-head alternative to what we now call "mainstream TV."


The networks and Hollywood do have reason to fear an Internet TV revolution. However, the videotapes and DVDs they once feared are now the income stream that they wish to protect from Internet TV. With proper planning and appropriate innovation, Internet streaming of their programs will increase their strength rather than signal their demise.

Recalling the Facts

1. Why can't an Internet TV set-top-box stream all the movies and TV shows that you can currently watch using a standard TV hookup?

2. If you could determine what is streamed from the Internet to your TV, what network programs and Internet websites would you include in your Internet TV lineup? ©

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The National Academy of Engineering developed an action plan to address the "technology" and "education" components of STEM (science, technology, engineering and math) with representatives from business, government and education to address growing employment demands.

Strengthen the "T&E" pipeline to address the looming shortage of talent prepared to enter these careers. Prepare your students by being the best.