

# Broadband Mobile Media:

Digital Video Goes Wireless By **John V. Pavlik**

**M**obile media and broadband wireless technologies are converging rapidly as growing legions of the U.S. and global population adopt cell phone and other mobile media devices to talk, text and produce, view and distribute audio and video content. The implications for television are significant, as growing numbers of persons use cell phones and other mobile devices to watch video

programming, often in the form of television programs formatted for small screens or shortened for a viewer on the go. In June of 2007, Sony Pictures Television announced the launch of the

Minisode Network, which features four- to six-minute length versions of 15 vintage Sony television series, including *Charlie's Angels*, *The Facts of Life*, *Fantasy Island* and *Who's the Boss*.

These programs originally aired in lengths of 30 or 60 minutes and have been edited down to Internet-compatible lengths for distribution via

MySpace. Honda is the sole sponsor of the Minisode Network, which is scheduled for eventual delivery to mobile devices, including cell phones. YouTube already offers a mobile video section, with 60 videos formatted for mobiles available on June 15, 2007. Among the offerings are mostly short-length (two to three minute) comedies, such as a satirical "Paris Hilton in Jail" music video, viewed by 4.5 million, rated four of five stars by more than 18,000

viewers and commented upon by more than 14,000.

Perhaps not surprisingly, viewers of cell-phone video tend to be younger and often watch video on mobile devices during

the afternoon of typical work days, thus expanding the potential television viewing audience in a time when other traditional television day-parts are seeing a shrinking audience share. Further, many of these cell phone video viewers are also capturing and distributing their own video, or video "gifted" from friends and family, or



John Carey

*Vertical iPod: The display device may change but TV is still TV*

watching video produced by various non-traditional sources or independent producers. The competition for the mobile video viewer is just starting to heat up in the U.S. and around the world.

As of May 2007, the Cellular Telecommunications & Internet Association estimates that more than 236 million persons in the United States

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subscribe to wireless communication devices such as cell phones (<http://www.ctia.org/>). This means more than 70 percent of persons in the U.S. subscribe to a cell phone or other mobile, wireless device. Roughly 11 percent of these mobile devices can display video. The number of mobile-phone video users in the U.S. is expected to reach 20 million by the end of 2007. These numbers represent a dramatic increase from 1990, when just some 4.3 million persons in the U.S. subscribed to cellular services, or less than three percent of the population, and none of them had video or even still image capability on their phone. The camera phone was not even invented until 1997, when Philippe Kahn created the first camera phone by soldering a camera and various circuits to his cell phone in order to shoot pictures of his wife's labor ([http://en.wikipedia.org/wiki/Philippe\\_Kahn](http://en.wikipedia.org/wiki/Philippe_Kahn)).

A notable mobile video trial is

emerging in Jackson, Mississippi. There, a Wireless Information Networks Laboratory known as MAN-RAN is being developed. Bruce Lincoln, strategic advisor to the Mississippi wireless project reported in a recent telephone interview that they are building a ultrabroadband wireless network, which will provide a platform for the delivery of video to mobile devices. A diverse array of content providers is planning to use the network to deliver video to mobiles, especially cell phones. Among those planning mobile video applications are distance learning, tele-medicine, cultural and arts organizations, such as the

BB King Blues Museum, and tourism.

There are many other mobile video applications, as well, including the development of citizen journalism and a virtual newsroom. A virtual newsroom is one in which citizens or professional journalists alike can cooperate or even collaborate in covering current events, breaking news or community news in general via cell phones and other devices, making video, audio and text-based news reports available via blogs, podcasts or other forms of media amenable to mobile technologies.

**M**obile video may have even greater potential outside the United States, at least in terms of numbers of users. In China, for example, more than 600 million persons subscribe to cellular telephone service, with 100 million more cell-phone users signing up each year. This data was reported by industry representatives at "Communication in the Digital Age: A

Global Perspective,” a conference at Jiao Tung University, Shanghai, last April where I gave an invited lecture. By the end of 2008 an estimated 32 million Chinese will be using cell- phone video. Eleven percent of Europeans are interested in mobile video (<http://www.itfacts.biz/index.php?id=P8490>), compared to 41 percent in the U.S. While nearly half, or 44 percent, want cell-phone video for free, 19 percent are willing to pay for it.

**M**ost have used a cell phone for more than two years. Even nearly half of 5- to 9-year olds in the U.S. now have their own cell phones (<http://www.itfacts.biz/index.php?id=C041>). Young Americans are so comfortable with their cell phones that a growing portion is dispensing with a landline. As of 2007, 25 percent of U.S. adults 18-24 have a cell phone only. About 12 percent of the overall adult population has a cell phone only. Half (50 percent) of mobile video users in the U.S. are 25-36 years old. This reflects not only their growing comfort with the technology and preference to be continuously connected, but also the growth of broadband wireless technologies, which enables a variety of advanced applications, including cell phone banking, music downloading and mobile video.

A growing amount of research on cell-phone video usage is providing insight into the opportunities and challenges of delivering video to mobile devices. Among the leading

researchers on mobile media is John Carey, professor at Fordham University. Based on his research Carey has found that one of the significant problems with using cell phones to watch video is power. “Battery life is an issue especially with cell phones. Video eats up battery power much more than a telephone call or listening to music. In the case of the iPod, it’s not as bad as a cell phone. If the battery on an iPod goes, they can’t listen to music until they recharge. If the cell phone battery goes, they feel they are losing contact with their world.”

Apple’s iPhone, introduced June 29, 2007 offers about eight hours of talk time, seven hours of battery life when viewing video, and six hours when

**An estimated 70 percent of 12- to 14-year-olds in the U.S. have their own cell phones and an even higher portion of 15- to 17-year olds do.**

using the Internet (somewhat less time if the video is being streamed via the Internet). Competing smart phones provide about 25 percent less video playback time. Palm Inc.’s Treo and Research in Motion

Ltd.’s BlackBerry Curve deliver about four hours of video playback time while Samsung Electronic Co.’s Blackjack plays video for about 5.5 hours before needing to recharge the battery.

Carey’s research also provides insights into consumer reactions to mobile video, especially on a small screen. Carey’s research shows that “When you ask people how they feel about watching video on an iPod or cell phone, the reaction is more negative than if you show it to them. Many are surprised how well it works when they actually see it.”

“The screen on a cell phone may

seem small until you hold it up close,” notes mobile media expert James Katz, Professor of Communication at the School of Communication, Information and Library Studies at Rutgers University. “Audio is also very important,” Katz adds. “What you won’t have much of is people walking and watching video on cell phones. My hunch is not a lot of people will be producing their own video from cell phones or watching each other’s cell phone videos. People will want what the big media companies produce and send out specifically designed for cell phones.” Yet, there is a relatively new form of video that will also appear with increasingly regularity on cell phones. “You will start to see more live two-way video between cell-phone users,” Katz says.

Research also suggests that the use of video on cell phones may be poised to accelerate. “The use of video on portable devices has been evolving and is not as great a leap as it might seem at first,” Carey says. “Many have used the laptop as a second TV in the home to watch DVDs and now video over the Web. Portable DVD players have been around for a number of years. And, both iPods and cell phones have been used for video games. So, video is a next step, not big leap for many.”

Moreover, watching video on a mobile device does not necessarily mean

watching it while mobile. “Much use of mobile video is in the home, which seems surprising at first,” Carey points out. His research shows that “Many like to curl up with their iPod in bed and watch music videos or a favorite show. Cell phones are carried everywhere a person goes, so it is not surprising that they might take a short break at home and check out a video clip.” As a result, some call the cell phone the “third screen,” after the television and computer.



*In the office: The picture quality on mobile devices has improved*

John Carey

Among the most widely available broadband wireless technologies for mobile video are 3G and Wi-Fi. 3G is a wireless technology for delivering broadband to cell

phones. In-Stat reports that as of 2007 210 cellular carriers worldwide have deployed 3G or will do so by the end of the year (<http://www.itfacts.biz/index.php?id=C0341>). Western Europe leads the way with 68 3G networks deployed, followed by Asia Pacific with 54, Eastern Europe with 38, North America with 19, South America with 18 and the Middle East with 13. 4G technology, the next generation of ultrabroadband wireless, is now entering the marketplace, and promises even higher bandwidth capacity to deliver video to cell phones. It utilizes Internet protocols to deliver high bandwidth capacity.

According to research by Carey, “One reason some other countries are ahead of us in mobile video is the leapfrog effect. We are heavily invested in 2G technology and companies want to recover their investment before moving

**Mobile video subscribers tripled between 2005 and 2006, and the number of users is expected to top 46 million by 2010.**

on to 3G. In other countries with older technology, they were able to leapfrog ahead to the latest 3G technology.”

Wi-Fi technology provides wireless broadband connectivity that can be used by cell phones, but is more commonly used to connect laptops to the Internet. Wi-Fi is widely deployed in the U.S. and internationally, with hot spots particularly widespread in urban areas (<http://www.wi-fihotspotlist.com/>). Apple’s iPhone provides dual wireless options to view video. It uses AT&T’s cellular data network, which is a relatively slow less than 3G network. The iPhone also has built-in Wi-Fi capability, which can provide high-speed, or broadband, wireless Internet access. The iPhone is the first cell phone to play video using a technical standard known as H.264, and is able to play videos from a user’s iTunes library as well as more than 10,000 videos available on YouTube.

Utilizing Wi-Fi and other broadband technologies to deliver television programming to cell phones and other Internet-connected devices is the Slingbox, launched by Slingmedia in 2004 ([www.slingmedia.com](http://www.slingmedia.com)).

Consumers with a Slingbox use the device to stream live television from their home cable box or digital video recorder (DVR) to their Internet-connected computer. From there, it can be instantly accessed by the consumer from any location in the world, whether via a cell phone or other mobile device or desktop computer. A Slingbox enables the viewer to change channels and perform other DVR functions remotely. Slingbox software automatically adjusts to bandwidth levels, device capabilities and video quality to optimize video display.

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Mobile video is also finding a profitable market niche. Revenue from mobile video increased more than three-fold (317 percent) worldwide for service providers to \$200 million from 2005 to 2006. Analysts expect mobile video revenues to triple by the end of 2007 ([http://www.itfacts.biz/index.php?id=CO\\_4\\_1](http://www.itfacts.biz/index.php?id=CO_4_1)). Mobile video subscribers tripled between 2005 and 2006, and the number of users is expected to top 46 million by 2010. North America, especially the U.S., represents 10 percent of mobile video users in 2006. Asia Pacific leads the world in mobile video usage, with 57% of the world total in 2006. The European Union represents 31 percent of the worldwide total of mobile video users. The worldwide video industry is expected to top \$6 billion by 2011. The video content people in the U.S. most want includes concerts, television drama, home videos and reality shows (<http://www.itfacts.biz/index.php?id=P8490>). Also of interest are

sports and news.

Roughly a third of those mobile video users watch mobile television programming during the early afternoon, between noon and 4pm, reports consumer media research firm Telephia (<http://www.telephia.com/>).

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Mobile video use drops dramatically to 9 percent during the regular television primetime hours of 8 pm to 11 pm.

Producers and distributors of mobile video are increasingly common as well. Traditional media companies of many types are creating video uniquely designed for mobile distribution and viewing. They are also repurposing existing video programming for mobile usage. Independent producers are also taking advantage of low-cost digital video production technologies to capture, produce and distribute mobile video. CBS has a new unit, CBS Mobile (<http://www.cbsmobile.com/>) devoted entirely to delivering mobile content, including extensive amounts of video programming for cell phones or other mobile devices. Among the programs are repackaged television shows, including *Dave TV*, clips from *The Late Show with David Letterman*, *ET to Go* and *CBS Sportsline to Go*, each of which costs about \$4 to \$5 a month for a subscription.

ESPN is producing video

programming for cell phones, including *Pardon the Interruption* and *Around the Horn*, and new shows such as *ESPN ReSet*, a show that summarizes the network's morning television programs (<http://espn.go.com/mobileespn/products?productId=2872888>).

ESPN Mobile also provides video coverage of the X Games, college football, and college basketball. The New York Times reports that 9 million people use the ESPN Mobile site each month (<http://www.nytimes.com/2007/06/17/business/yourmoney/17mobile.html?pagewanted=all>).

MTV is also producing mobile video programming, including music videos, television shows formatted for the small screen, and news programming (<http://www.mtv.com/mobile/>). Even the Associated Press (AP), the news service traditionally associated with newspapers, is developing video news products for mobile devices ([http://www.mobilewirelessjobs.com/2006/04/the\\_associated\\_press\\_mobile\\_pr.html](http://www.mobilewirelessjobs.com/2006/04/the_associated_press_mobile_pr.html)).

The News Corporation, which operates the Fox Network and Fox Studios, has invested in the production and distribution of mobile video programs, and has trademarked the name "mobisodes" to describe them. Although many of the early productions of cell- phone video have emphasized short, snack-sized clips for consumers on the go, ABC questions the assumption that mobile viewers want only short video programs on their cell phones and premiered full-length mobile versions of its popular shows *Desperate Housewives*, *Grey's Anatomy* and *Lost* on the Sprint wireless network (<http://abcmobile.playp.biz/>).

**D**isney ABC Television Group vice president Albert Cheng told the author in July, 2007 that delivering media content on mobile devices is vital to future growth for the television business. “My focus is to build a business based on wireless, video-on-demand, broadband, interactive television, and other electronically distributive devices and content,” says Cheng. “We expect our mobile video subscriber business to reach 14 million in 2009, up from about 200,000 today.”

One of the challenges is managing intellectual property rights for mobile platforms. “That’s one of the reason you don’t see a lot of content for wireless devices right now,” he said. “We own the shows *Lost* and *Desperate Housewives* from beginning to end of production, so now when we know a show will be good, we negotiate ahead of time to clear distribution on all platforms.”

Two areas being featured in ABC’s mobile media efforts are “Millennials” and mobile TV, Bernie Gershon, senior vice president/general manager of digital media for Disney ABC Television Group, told me last summer. Millennials are the 79 million Americans between the age of 8 and 27. Millennials, Gershon explains, multitask and “consume information on a variety of devices,” which is a key ingredient to mobile media.

Mobile video is also presenting opportunities to reinvent the business model for television. The three main forms of revenue that have emerged to date are advertising supported programming, pay-per-view and subscription.

ABC’s mobile broadband business includes streaming ad-supported

programs on ABC.com, selling \$1.99 shows via iTunes, and \$4.95-a-month subscriptions to ABC News Now. “Our strategy is aligned with the demands of the new consumer,” adds Gershon. ABC News Now reaches 25 million broadband homes and 2 million mobile users as subscribers. Since October, 2006, ABC has sold more than 5 million program downloads via iTunes. ABC.com has notched more than 2 million video plays since the launch of the service in June, 2007.

Increasingly common are pre-roll commercials, where the viewer must first watch an ad before the program begins. Oftentimes, the ads are very short, as little as five seconds. Also common are product placements embedded directly into programs.

**A**s broadband wireless technology expands, a growing number of video, or even television, services will be made available for cell phone access and viewing. Mobile television is already widely available in a number of markets, including the United States, Latin America, Europe and Asia. In the U.S., Verizon Wireless, for example, launched in spring 2007 the delivery of full-length television programming to its cellular subscribers from several major television networks, including live television. The service provides eight television channels, and includes shows from NBC, CBS, Fox and MTV. New multimedia cell phones, such as the iPhone, featuring a 3.5 inch screen, make viewing television on a mobile communication device an increasingly attractive possibility to many cell phone users.

In Latin America, LAPT TV is offering live streaming of television programs to cell phones in Buenos Aires, LAPT V Manager Juan Mariano Sola told me last

year. This service utilizes 3G wireless technology that is already ubiquitous in Buenos Aires.

Lay citizens around the U.S. and internationally are also using these low-cost technologies, especially cell-phone cameras, to shoot and distribute mobile video. It is estimated that by 2009 there will be more cell phone cameras than all other cameras, analog or digital, sold in the history of photography. This ubiquity is facilitating an explosion of mobile video production and distribution. Virtually every public event is captured on cell phone cameras and more often than not made available via the Internet.

The 2007 shooting at Virginia Tech University illustrates the role that cell phone cameras can play in citizen journalism, as extensive video of the campus during the shooting rampage was captured on a student's cell phone and then made available online and via television news (<http://www.youtube.com/watch?v=MrI3H5jeX-Q>). Many private events are similarly captured and distributed, sometimes to later amazement, surprise and sometimes embarrassment of those involved in the event. Also on the horizon for mobile broadband is location-based video. This is video programming that is delivered to mobile devices in connection to specific locations. For example, when a person visits or passes a location, a video message tailored to that specific location is delivered on-demand to the cell phone user. Video commercials or programming related to a specific location are among the types of broadband content being tested. The author and his colleagues are designing a location-based video trial for the Blues Trail in Mississippi,

where visitors to the region carrying a mobile phone will be able to access video about the story of the development of blues in the Mississippi delta. Video segments will be linked to various Blues Trail markers now being deployed in the region.

**D**oes the advent of mobile television and video programming for cell phones and other portable devices pose a threat to traditional television viewing? Probably not, as evidenced by the National Academy of Television Arts & Sciences nominating the Fox 24: *Conspiracy* Mobisode when the Academy launched what *The New York Times* called "iPod Emmy" awards in 2006. But it does suggest that mobile media consumers want video news, sports and entertainment programming and they are not bothered too much by the small screen size. Many mobile consumers are even willing to pay for mobile video programming. And they do not seem to care about who provides the mobile video programming as much as how easy it is to access and what its entertainment value is.

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