

# THE IMPACT OF CONSUMER DEVICES ON RADIO CONTENT DEVELOPMENT AND ENGINEERING

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Radio was the king in the twenties. We had one big radio in the family room and we all gathered 'round and listened.

We heard history being made, peace being won and exciting endings to our sporting events. The radio was added to the car and we were able to take it with us. As radios became cheaper, each member of the family had one.

When the transistor was invented, we could have a radio on our person. Radio was everywhere.

Then came TV and the new device forced the radio out of the family room. But TV could not be viewed in the car, so radio held that ground.

After surviving the 8-Track tape, cassette, CD, Satellite Radio and the auxiliary iPod plug in the car, radio will greet another challenge in the near future, Internet Radio in the car.

Three decades ago cell phones were things only the CIA and NASA had and the idea of changing your station log from your beach front property would have been laughed at; my, how things have changed.

The key to staying ahead of the curve is to understand what devices like smart phones, tablets and dedicated devices can do. The ultimate value for your operation will come when applications are written for the devices that enhance your content or streamline your duties.

Learning the finer points of designing applications and understanding the capabilities of the devices will propel radio stations to get there first.

## IMPACT ON BEHAVIOR

From the beginning of the computer age, there have been noticeable changes in the way audiences are using media. The first change is based on the shorter attention span.

There was a time when consumers of web content would wait for a download of the family pictures from that uncle in another city. Today, consumers are driven by instant gratification.

Just as radio users had taught themselves to punch from station to station in pursuit of their favorite song, today's computer kids want everything now.

## COMPETITION: THE GREAT MOTIVATOR

One of the age old complaints about radio was the fact that you didn't know what the name of the song was until it became very popular.

Satellite radio and computer music players display the name of the song and artist. Radio had to catch up. The text part of HD Radio was born out of the impact of other technologies bettering radio. RDS is a good idea, but was not mandated into the device by governing bodies.

Another aspect of the computer age was the need for radio to get to the Internet with its local product and offer a streaming version of each station.

After governmental restraints, union intervention and record industry demands, terrestrial streaming finally got onto to the web.



Apple's iPhone

The key to communication power was developing a device that could combine the vastness of the Internet, the power of your own music and the fun of a video game.

After almost dropping off the face of the earth, Apple Computers came back, not with just their computers or efficient operating systems, but with miniature devices to enjoy entertainment.

Much like that transistor radio in the 50s, Apple's iPod changed the way the consumer listened to music. By product line-extension and brilliant invention, the company continues to build on that theme by putting iPads and iPhones in more and more hands.

### CONTENT FROM ANYWHERE ANYTIME

Now, we have a stream where billions of people can fish for content in thousands of languages tailored to their tastes and nationalities.

By connecting the smart phone to the Internet, radio has a challenge far greater than ever before. Local radio is now competing with all that is out there. People still have local interests, local needs and desires, but they

will need something to help them find those things missing from generic Internet user experiences.

### DOES RADIO NEED A TRANSMITTER?

Radio stills needs to transmit, because its local community should always be able to hear the station on the millions of devices already out there. When there is a local emergency, local radio may be the only form of communication available.

Radio is highly affected by the new technologies. As more and more phones have access to the Internet, the local station must be available on the Internet. The need to run different commercials on the Internet than on over-the-air broadcast can be solved by software playout systems that handle multi-channel distribution of content.

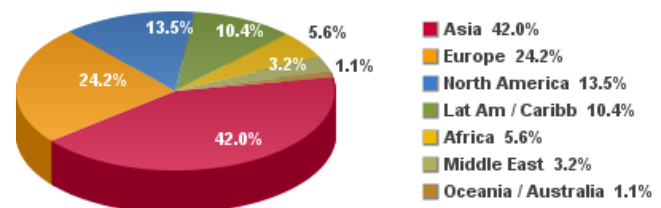
Radio must think of itself as a content provider, but unlike national or international content providers on the web, radio can and should be local and specific. So, the web is just another transmitter in the chain.

### WIIFM (or why you should care)

Your audience cares. Your potential audience cares. Your sales team cares. You should care.

Those listeners who can potentially reach your station by using the Internet is growing.

### Internet Users in the World Distribution by World Regions - 2010



Source: Internet World Stats - [www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm)  
Basis: 1,966,514,816 Internet users on June 30, 2010  
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The number of cell phone users that could possibly hear your station is staggering.

Rank	Country	Cell Phones	Date
1.	China	547,286,000	2007
2.	European Union	466,000,000	2005
3.	India	362,300,000	2009
4.	United States	255,000,000	2007
5.	Russia	170,000,000	2007
6.	Brazil	120,980,000	2007
7.	Japan	107,339,000	2007
8.	Germany	97,151,000	2007
9.	Pakistan	88,020,000	2008
10.	Indonesia	81,835,000	2008
11.	Italy	78,571,000	2006
12.	UK	71,992,000	2007
13.	Mexico	68,254,000	2007
14.	Turkey	61,976,000	2007
15.	France	56,719,000	2007

Cell Phone Usage Worldwide, by Country (Top 15)  
 Source: CIA World Factbook 2009.

Options for Internet and cell phone delivery of radio products are abundant, from iHeartRadio, Pandora, AOL and Jelli.

In 2010 an Arbitron study asked, "Among Internet, Television, Radio and newspapers, which one is most essential to your life?" 42% answered the Internet, up from 20% in 2009, surpassing TV at 37% -- more than one in four online radio listeners is very interested in listening on a device in their car -- about 6% are already

using the cell phone as a radio in their car -- more than half of iPod/MP3 player owners have listened to digital audio files in a car -- an estimated 70 million Americans listened to online radio in the past month.

### ENGINEERING ADVANCEMENTS

Consumer devices and achievements in technology have turned the engineering side of the house upside down.

The new availability of consumer access to mobile data services created the need for station engineering to design and maintain multiple transmission paths. Bandwidth tailored parallel processing stages are now a necessity for stations broadcasting in HD and over the Internet. This is definitely not a one size fits all scenario. Aggressive encoding algorithms suited for a minimal bitrate environment must be tweaked to provide the best sound possible in order to stand out from the vast amount of professional and amateur Internet broadcasters. A new breed of processors are making their way into our station equipment racks, ones where a single source in can be uniquely parallel processed out to varied pathways. Multi channel processors now offer many individual content channels with customized processing in one unit, saving rack space and power.

A related, but different problem has to do with on demand content creation and delivery. The in house file storage formats do not typically fit well with consumer playback hardware. When you consider the delivery bandwidths available and minimal support (or need for support) for the high bitrate / low (or no) loss audio compression codecs that we have and need to use in broadcasting, you will soon realize the inevitability of working with and maintaining multiple libraries of content or versions of content that are varied in format.

Asset manipulation and management has never been more important or complicated for the broadcast engineer. Because of this need, engineers have had to construct complex storage systems to be able to service the in house needs as well as the out of house (on demand) needs of the consumer. Many large broadcast companies have partnered with outside sources to help

with this content organization nightmare that can occur when they are sourcing large numbers of unique Internet channels.

Interactivity is not necessarily new to radio, but how it is done sure has changed. The one way broadcast with phone, diary and face to face return paths have been replaced by IM, texting, PPM and customized app communication. These newer platforms have brought changes into the station control rooms as well as other station environments.

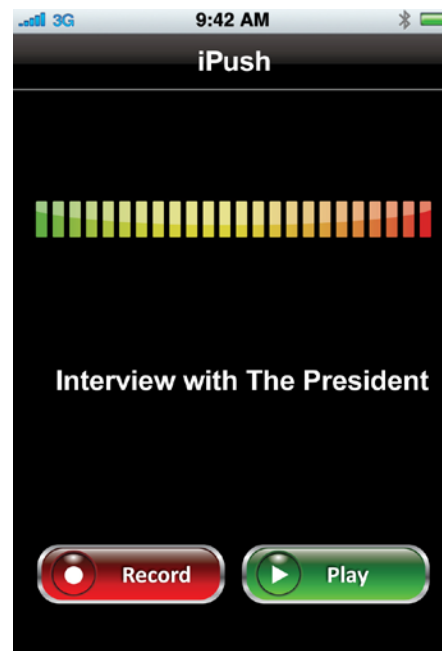
Music scheduling can now be directly tied to PPM data associated with performance at the song or show level not to mention real time feedback methods such as LDR (Listener Driven Radio) where listeners can influence what they will hear. Many of these high level return paths require secured interfaces with the open outside Internet. IT protocol security and port level communication control are absolute necessities when interfacing with mission critical in house mechanisms such as music scheduling and billing systems.

Content development has of course been impacted by the advances in consumer technologies as well. Radio has always been able to monetize content through advertising, but there are options through direct subscription radio (using IBOC HD) as well as direct Internet deliveries such as podcasts. We can even get in on the action of music sales through website linking and via iTunes tagging enabled receivers.

Sales teams now have apps for their Apple iPad, iPhone, etc. allowing access to new accounts report and feature comparisons. Instantly see which new advertisers went on the air from anywhere providing fast up-to-the-minute information that you can turn into a sale.

The actual content creation process itself has even taken inexpensive data connectivity packages. RCS's iPush is an app for your phone or hand-held device that lets you record then send voice tracks right into an automation system.

The audio transfers back to the automation system for playback on the air. Bulky recording equipment can be left at the studio and while on location broadcasters capture events. iPush works with the iPhone and the second generation or newer iPod Touch. iPush can use the phone's microphone, or can be upgraded to higher quality third party microphones via wired cable or Bluetooth interface. Even event site metadata can be sent along with the audio for proper ingest into the stations asset library and indexing for subsequent database search queries.



RCS iPush Record Screen

## THE FUTURE IS NOW

Technology by its very nature moves forward. We all must ask the question "why." There just might be a way to do it better. The car, the pocket and the home: the next battlegrounds for digital and broadcast:

- Strong evidence of demand for Web audio (and more) in-car

- Mobile devices and their impact on radio

- Wi-Fi changing how media is consumed at home

Yes, we are engineers and this information is very important to our livelihood and the trends to come. We must stay cognizant to change.

## **IN CONCLUSION**

The lines between consumer and business products have blurred. You can now run many functions of your radio station from your smart phone or tablet computer. Remotes, engineering functions, programming adjustments and voice tracking all utilize consumer technology. Costs are constantly improving and migrating to unique engineering possibilities that are achievable now.

Easy to use consumer hardware and thousands of well-written software programs combined with the social networks have changed the face of broadcasting. The global village has arrived and smart radio people are jumping into the village with both feet.

A radio station is no longer just a radio station. Radio is a content provider that needs to tap into the millions of outlets for their content. With terrestrial broadcast, Internet streaming, HD channels, downloadable podcasts, and mobile phones being landing places for radio content, broadcasters have to move quickly.

Tech savvy consumers expect to be able to click a button and get whatever content they way, for free, or for minimal cost.

The future is now.