



The disruptive effect of the Internet and mobile phones on out-of-home digital media

By Bill Collins and Stephen Randall

Executive summary

Fostered by their experiences via the web and on-demand TV, consumers in many countries have developed a seemingly insatiable desire for connectedness and ease-of-access to information and entertainment, anytime, anywhere.

Web-savvy businesses are feeding on that desire and, as a result, are attracting billions of dollars away from traditional advertising budgets.

But beyond the reach of the PC or TV, advertisers are struggling to create measurable interactions with

consumers. For example, there have been several attempts to squeeze the web and TV experience into a mobile phone's 2" x 2" screen, but other than helping to wow customers in the phone store, these strategies fail to provide a simple or compelling user experience. Lack of handset standardization and poor interoperability have not helped. The only ubiquitous mobile applications regularly used by consumers are voice and text messaging.

Another approach is to reach consumers where they shop, by advertising on digital out-of-home signage networks (sometimes referred

to as narrowcast networks or dynamic digital display networks) in storefronts and public spaces. The price erosion of large format displays is leading to their growing use as an out-of-home medium, especially in urban centers, sports and entertainment venues, retail stores, medical settings, banks and shopping malls.

Wal-Mart, the world's biggest retailer, was one of the first retailers to recognize the potential of digital signage by building its own in-store TV network spanning more than 2,500 of its stores and reaching an audience of more than 180 million viewers a month.

Scenario 1: City Guide



*John is from out of town and hasn't decided where to eat tonight. He sees a large City Guide screen on the street corner, displaying details of a local map and playing short highlights of local restaurants, bars, entertainment and tourist information. The screen displays an invitation to be 'remote controlled' from a mobile phone. John dials the number on the screen and hears a voice prompt on his mobile phone say "Press the keys on your phone that correspond to items of interest on the screen." For example, he can press 1 on his mobile phone keypad to see local restaurant options, or press 2 to see local bars. He can also use his * and # keys to zoom the map in and out. He follows the on-screen prompts and browses to a local French restaurant and likes their menu. He presses 0 and connects directly to the restaurant to reserve a table.*

Source: LocaModa

Wal-Mart charges advertisers on the network between \$60,000 and \$293,000 to show an advertisement for four weeks (Source: The Economist).

However, out-of-home "push models" of impression-based advertising (as opposed to the web's "pull model" of intent-based search), depend on the frequency of a message and are therefore not much better than commercials on traditional TV. This fact is not helped by the growing indifference to push advertising and the fragmentation of media channels.

Consequently, more and more advertisers are seeking measurable media and moving away from impression-based models.

Kiosks are an out-of-home technology that is measurable and shows

promising signs of growth. Although kiosks can identify a user via a credit/debit card, ticket readers or by requesting that a user type in details, kiosks are challenged to provide web-like data-mining capability such as making offers to consumers based on similar users or their profiles. Kiosks are also less able to provide competitive solutions outdoors, in store windows or in many-to-one applications.

For the same reason that TV is being disrupted by interactive technologies, out-of-home signage networks that are currently architected and programmed like TV networks will have to become capable of more measurable and interactive solutions.

In order to provide data-mining capabilities comparable to those on the

web and to prevent being commoditized, digital signage network vendors will need to offer advertisers the option of a closed loop between consumers and advertisers, even if they continue to offer one-way TV-like advertising for some of their programming.

Although the kiosk vendors are better placed to provide interactivity and measurability, they are likely to face competition from more flexible, scalable web-based solutions.

In the coming years, as the web and web-based behavior spreads beyond the desktop, it is unlikely to do so in the way we know it today. As with a PC's combination of screen (output), keyboard (input) and network connectivity (communications), a digital signage network cannot provide a similarly powerful closed loop without offering a ubiquitous method of interactivity between the user and the system. In out-of-home settings, this new interactivity is most likely to be realized via the mobile phone, by using the same voice and text messaging capabilities that consumers use today.

Out-of-home signage networks will have to become capable of more measurable and interactive solutions.

This paper concludes that out-of-home signage applications will leverage a combination of the web together with mobile phone technology to achieve best-in-class interactivity.

It also concludes that future digital out-of-home signage networks will be built on scalable, interactive web-based architectures rather than today's more typical passive narrowcast designs.

As a result, the appropriate combination of narrowcast, web and mobile phone technology will enable businesses to benefit from their proximity to mobile consumers and enable them to deploy more effective out-of-home marketing.

Background

We live in an on-demand media culture. What was once a passive push-based screen medium on network and cable/satellite TV is now being fast forwarded on digital video recorders (DVRs) or

consumed on websites such as YouTube.com, iTunes or MySpace.com.

We are evolving from a primarily “lean-back” TV experience (“The First Screen”) to a more active “lean forward” experience on a PC (“The Second Screen”).

On this Second Screen, consumers are devouring, controlling and creating content. They want instant gratification and have come to expect it with the click of a mouse or a remote control. And their expectations are not going to stop at the couch or the desk.

Gone are the days when marketers such as John Wanamaker would joke “50% of advertising works; we just don’t know which 50%.” Wanamaker, a 19th Century Philadelphia merchant, became the first modern advertiser when he bought space in newspapers to promote his stores.

Wanamaker was ahead of his time. Greg Stuart, CEO of the Interactive Advertising Bureau, estimates that

advertisers waste \$220 billion worldwide, or just over half the \$428 billion worldwide advertising revenues forecast for 2006 by ZenithOptimedia, a market-research firm.

The appropriate combination of narrowcast, web and mobile phone technology will enable businesses to benefit from their proximity to mobile consumers.

The disruption of traditional media is challenging all businesses that depend on advertising. But the promise of the web is only the beginning of traditional media’s problems. The media industry’s next challenge is to create measurable

interactions with consumers beyond the TV and PC.

Without an ability to connect their businesses to mobile consumers, many marketers are finding that their target market might as well be on the dark side of the moon.

While there is growing awareness among marketers that the mobile phone is “The Third Screen” after TV and Web, there is actually a *fourth* screen network that touches the every day lives of many mobile consumers: the out-of-home digital signage network.

The challenge is to find a cohesive strategy that enables marketers to leverage the third and fourth screens as successfully as they have done to date with the first and second screens.

Mobile phones - the means NOT the end

There are over 2 billion mobile phone subscribers in the world and over 200 million in the U.S. (Source: Ipsos Insight) far outstripping the 575 million PCs in the world today (Source: Forrester Research).

While some high-end mobile phones (sometimes referred to as smart phones, converged devices, PDA phones or communicators) are effectively PCs, they are neither mainstream nor standardized devices. IDC defines converged mobile devices as mobile phones having a high-level operating system, such as Symbian, Windows Mobile, or embedded Linux. Vendors are increasingly characterizing these devices as “prosumer” (in other words, professional tools rather than consumer devices). According to IDC, such devices represent less than 0.5% of the 2 billion installed base of mobile phones worldwide.

The media industry’s next challenge is to create measurable interactions with consumers beyond the TV and PC.

For just a moment, let’s suspend belief and assume that we all have “the perfect mobile device.” What would that be? For business users, it might be an email-centric device. For teenagers, a social networking or IM-centric device.

Scenario 2: Social Media



An internet-connected screen hanging on the wall of a bar in Miami invites people to “Txt Out Loud” by sending text messages from their mobile phones directly to that screen. There are similar screens in other locations all over the U.S. - an ice cream parlor in Boston, a café in Chicago, a diner in Seattle, a club in Colorado. Shaun reaches for his mobile phone, enters the Screen ID, types his message and then presses SEND. His message appears on the bar’s screen a few seconds later. Shaun’s message also appears on a website where web-based users can view and send messages to any of the location-based screens.

Source: LocalModa

For other people, key features might include music, videos, photos or games. Now consider that regardless of design, mobile phones should enable people to reach their favorite features within 1-3 key presses. And, of course, a mobile phone should also be an excellent voice-centric device, which is pocketable, light and can run for at least 24 hours without a recharge.

Marketers attempting to reach mobile consumers certainly have their challenges.

It is easy to see that the one-size-fits-all approach that works so well in the PC market is much less likely to work in the mobile phone market. There is no perfect "Swiss Army" design for mobile phones.

One would hope that mobile network operators (e.g. Cingular, Verizon, Sprint/Nextel, T-Mobile in the U.S.) would offer seamless interoperability between multiple devices, services, applications and their networks. However, the operators' ecosystem is still surprisingly immature. Mobile developers and service aggregators work with different business models depending on the operator and country, leading to a

fragmented infrastructure and lack of standards and resulting in a poor end-user experience. Marketers attempting to reach mobile consumers certainly have their challenges.

In order to reach the 2 billion mobile devices, marketers should obviously leverage technology that works in a majority of handsets and across a majority of networks. They should not be tempted to use less standardized mobile technologies.

Dialing numbers and text messaging are already ubiquitous applications. According to the CTIA Wireless Association, there are over 400 Million text messages sent daily, and over 12 billion in the month of June 2006.

Combined with the appropriate "connective tissue," voice and text messaging technologies already available on a majority of phones can be used to mobile-enable digital signage networks and deliver web-like interactivity and measurability to out-of-home applications.

The insight is that today digital signage networks are an underutilized location-based technology. Ironically, as a means of connectivity, a basic mobile phone is already good enough for many out-of-home marketing applications.

The insight is that today, digital signage networks are an underutilized location-based technology.

Location, Location, Location

In the mobile phone industry, the idea of using a location's proximity to mobile consumers is not new. An often-touted but flawed vision of location-based services is one where mobile network operators can target mobile consumers in a specific cell, perhaps with an offer for a nearby restaurant or movie theatre.

But services delivered without the consent of the end-user foster distrust, often resulting with users turning off their phones.

Thankfully, legislation in the form of the CAN-SPAM Act of 2003 is helping to prevent this type of short-sighted approach from taking root. It is clear that successful mobile applications will

Scenario 3: Real Estate



Jayne is looking for a new apartment. She sees an interesting property on a screen in the window of a local real estate brokerage. She wants more information on the property but the brokerage is closed. The screen displays an invitation to be 'remote controlled' from a mobile phone. She dials the number on the screen and hears a voice prompt on her mobile phone say "Press the keys on your phone that correspond to properties that interest you." For example, she can press 3 on her mobile phone keypad to property number 3. She can also use her * and # keys to browse to more pages of properties, view a map and search other areas – all viewed on her phone. She follows the on-screen prompts and browses to a property she likes to see more detailed views and information. She presses 0 to be placed on a mailing list and request that the broker contacts her. The broker receives an email with Jayne's request and is able to respond immediately. Jayne could also continue her search on line by typing her phone number into the realtor's website. Her phone number is treated as a cookie, so the website can return her to properties that match her browsing history or preferences.

Source: LocalModa

give the consumer - not the mobile network operator - control over what, where, when and how they receive information.

Fortunately, we need not worry about seeing web-like content on a screen barely larger than a Post-it® note as there are other ways of reaching the mobile consumer. One alternative

starting point in reaching mobile consumers is to rethink the notion of “location” in relation to trust, technology capabilities and the end-user experience.

Narrowcast screens are, by their very nature, connected to the Internet in order to “cast” content narrowly to a specific location. They are typically

large format screens of 50 inches or more. However they are characteristically passive as far as the viewer is concerned and so are little better than TV, except that they are placed “outside.” If the consumer cannot react to a specific marketing message when they are “in the moment,” another advertisement is

Table 1. Comparison between standard narrowcast signage, kiosks and mobile-enabled narrowcast signage

	Standard Narrowcast Signage	Kiosks	Mobile-enabled Narrowcast Signage
Typical deployment cost per screen including PC	~\$2,000+ <i>Depends on screen size, inside or outside location.</i>	~\$8,000+ <i>Depends on screen size, enclosure quality. Average cost of Kiosks in U.S. is \$8,300 (Source: Summit Research)</i>	~\$2,000+ <i>Depends on screen size, inside or outside location.</i>
Potential for closed-loop between user, web and business	No	Limited <i>Only possible for systems with Internet connection and input means for user (such as card swipe).</i>	Always <i>Systems are connected to the Internet. Users connected via mobile phones. Interactions connected via mobile gateway.</i>
Data-mining ability	N/A <i>Requires “disconnected” means to evaluate effectiveness such as surveys, sales uplift etc.</i>	Limited <i>Can measure number of “touches” and transactions on system but cannot get user info unless kiosk has card reader or user provides it via keyboard.</i>	Good/Inherent <i>Every call to system provides info on user interactions and captures the user’s phone number which can be used as a cookie for personalization.</i>
Close loop targeting ability	No <i>Passive screens have no way of responding to user interests.</i>	Sometimes <i>Depends on application design. User required to enter data or swipe a card.</i>	Yes <i>The user’s mobile phone number and all interactions (key presses) are captured.</i>
Revenue Potential	Advertising and Merchandising only	Commerce and limited advertising	Advertising, Merchandising, Interactive Advertising and Commerce
Ability to serve one user or many users simultaneously	One-to-many	One-to-one	One-to-one and One-to-many
Ability to reach audience beyond 10 feet	Yes	No	Yes
Assimilation and retention of data	Good <i>Better than traditional advertising. (Source: InfoTrends)</i>	Unknown <i>Depends on whether the kiosk is visible to audience when not in use.</i>	Good <i>At least as good as standard digital signage.</i>
Requirement for retail floor space	Wall mounted	Approx. 25 square feet <i>Kiosks always occupy real estate on the store floor and require more floor space for the user interaction.</i>	Wall mounted
Requirement of consumer to be close to display	Close or at a distance	Close <i>The user is required to touch the screen.</i>	Close or at a distance <i>The user can view and/or interact with the screens either at a distance or up close.</i>
Support considerations	Minimal - typically remote managed <i>No moving parts. Nothing comes in contact with end-users. Diagnostics via network.</i>	Requires on-site management <i>Coin slots, card readers etc require regular support. Fingerprints, wear and tear, damage to touch screens need to be factored in.</i>	Minimal - typically remote managed <i>No moving parts. Nothing comes in contact with end-users. Diagnostics via network.</i>

likely to diminish the effect of the first message, requiring the advertiser to frequently reach the same consumer with the same message.

The web is reinventing the rules of engagement with its intent-based model (i.e. when a user searches or clicks on an item of interest, there is clearly some level of interest in that product, service or content). It is becoming increasingly valuable for a business to be able to react to that intent and/or to data-mine that user's interactions to improve their product/service offering. This has been proven with the creation of the "pay per click" business model.

As more advertisers rely on data-mining tools, platforms supporting their campaigns will need to be capable of interactivity. Networks unable to support the interactive requirements of top advertisers are likely to become marginalized. Out-of-home signage networks will not be exempt and will therefore need to be built on scalable, interactive web-based architectures rather than today's more typical passive narrowcast designs.

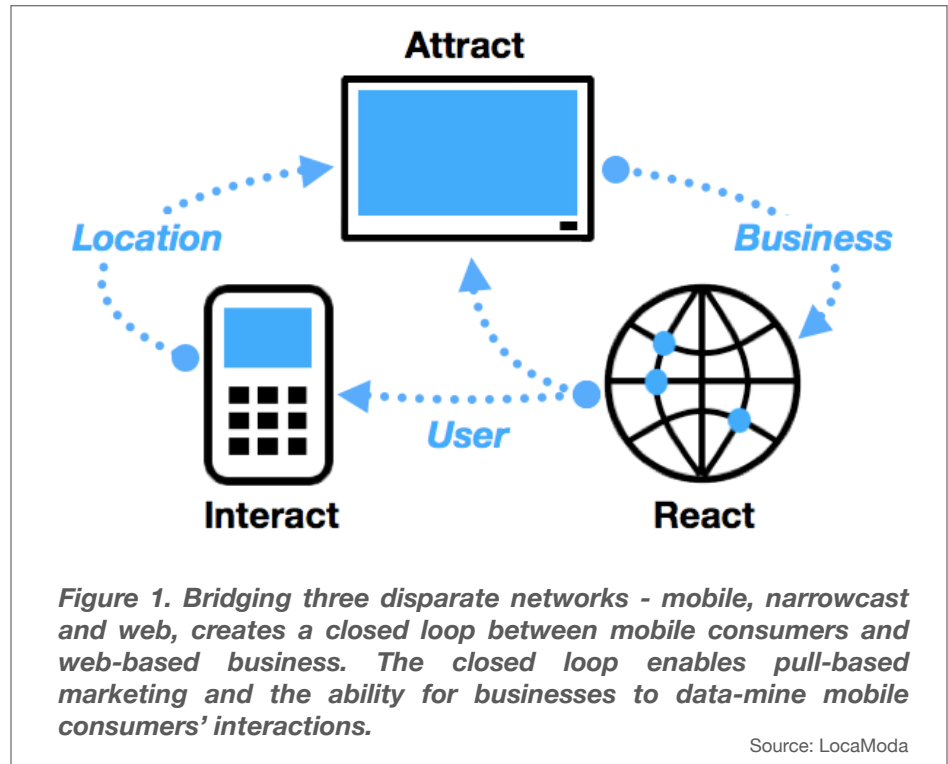
Networks unable to support the interactive requirements of top advertisers are likely to become marginalized.

Reach out and touch

According to the 2006 Summit Research report on the kiosk industry, North America will approach one million kiosks by 2008.

Kiosk technology can deliver a clear return of investment and measurable marketing and commerce to out-of-home applications ranging from ATMs, ticketing, photo printing and self-checkout systems.

Around 30% of kiosks are deployed in retail locations. Their strength is somewhat limited to one-to-one applications where one screen serves one customer at a time (see Table 1). In effect, these kiosks transform a traditional labor-intensive transaction – such as printing photos or registering at a retailer's gift registry – by making that transaction quicker and easier for the consumer.



Sometimes these kiosks also cut operational costs.

Kiosks often use bar-codes or RFID tags to identify a user's ticket or product. More typically, the kiosk network cannot identify the user without the user swiping their credit, debit or store card into the machine, or by typing in personal details. These interactions often create additional barriers between the user and the business.

In considering if a kiosk is the appropriate choice for an application, the designer needs to weigh issues such as cost, the amount of floor space required, and ongoing maintenance and support. Kiosks are typically more expensive than signage systems because they combine signage systems with an enclosure and a touch screen.

Maintenance/support of kiosks can also be challenging because they often include moving parts such as card readers or coin slots.

For applications in retail windows, or on the street, kiosks are also challenged. Some touch-screen solutions exist for store-fronts, but they tend to be a very expensive utilization of the real estate. Another key issue for kiosks is that they require the user to step into their "zone" and touch the screen. One should never underestimate the problem of taking control away from the end-user.

Control freaks

In Steven Spielberg's film, *Minority Report*, personalized interactive advertisements are pushed ad infinitum to the Tom Cruise character from screens in a future shopping mall.

However, it's important to understand that the future of out-of-home screen media is unlikely to follow this Orwellian model. Instead, the consumer of the future is likely to take more control of what they see, when they see it and where they see it, even in public venues.

That future happens when there is:

- i) **A clear end-user benefit:** a time, labor or cost saving.
- ii) **A clear business benefit:** competitive advantage, differentiation, brand extension, demonstrable return on investment.
- iii) **Mutual trust:** trust that the technology and information will not be abused by businesses data-mining the information which would ultimately compromise the applications for businesses and consumers alike.

By combining mobile technology with narrowcast networks, the consumer is given the opportunity to use the mobile phone, a device they carry around with them every day.

Being familiar and trusted, the mobile phone is also the device the user feels in control of. Unlike using a kiosk, users of mobile-enabled signage make and break their engagement within a personal “comfort zone.” The consumer can view the signage at a distance and dial the phone number displayed on the sign. From that point forward, users follow a series of voice prompts that allow them to use the phone like a TV remote control.

The required connective tissue to complete the closed loop between the user and the business is a mobile gateway. The mobile gateway translates a user’s phone key presses and sends them to a specific screen that then displays the requested content. The mobile gateway is capable of understanding interactive voice response (IVR) commands or Short Message System (SMS) commands or other message protocols (such as Blue Tooth or MMS).

Figure 1 shows the data-flow between a user’s interactions with a location-based screen (the “Attract” loop) and a business’s ability to react to the user by dynamically changing the screen and/or responding to the user (the “React” loop).

The future success and differentiation of out-of-home signage networks will depend on their ability to *attract, interact with and react to* consumers in the moment.

Attract: Use engaging one-to-one or one-to-many dynamic content that, by being displayed in the right place, at the right time, is more relevant to the target audience “in the moment.”

Interact: By using mobile phones, consumers can engage with content on the narrowcast screens without having to leave their own “comfort zones” (i.e. without having to enter the business’ territory prematurely, which can endanger the prospect of a sale or relationship). Being “in control” leads to a more compelling user experience.

React: Like the web, businesses can data-mine every click. The user’s phone number is treated as a cookie, so his or her interactions can also be personalized across several sites, or several transactions. If the user opts-in, that phone number can be used for further contact.

Locations such as retail outlets are well positioned to leverage their proximity to mobile consumers. Such locations will be able to offer services in which consumers can interact and ultimately transact simply. Platforms that support these interactions and transactions will create incremental revenue for the location owners, service providers and brands.

What comes with this new technology is the ability to measure consumer interactions. Measurability across all screens will define the future of these networks. It reassures brands and advertisers that their dollars are being spent effectively as it enables constant feedback and fine-tuning of their campaigns.

The future success and differentiation of out-of-home signage networks will depend on their ability to attract, interact with and react to consumers in the moment.

Mobile-enabled narrowcast networks will find applications in many vertical markets. A few examples include:

- **Travel and Tourism:** city guide, travel agent and digital concierge (See Scenario 1 on page 2)
- **Bar/On-Premise Promotions:** social/dating, jukebox, gaming/lottery (See Scenario 2 on page 3)
- **Real Estate:** window display connected to MLS databases or other web-based assets (See Scenario 3 on page 4)
- **Automotive:** showroom application and marketing campaigns
- **Retail:** digital mannequin, interactive shopping

Conclusion

Multiple media channels vie for the attention of consumers every hour of every day of every year. Messages besiege consumers at home, in the car, train, bus, plane, on the web, on the side of buildings and even in elevators.

The rules of engagement are changing on many fronts. With rapidly changing technology and legislation, the days

when marketers could reliably assume they could reach their audience have long gone. Rapidly evolving technology is changing the way in which consumers interact with marketing messages. Consequently, more marketers are demanding measurable results.

In contrast, businesses mindful of the limitations of mobile technology can leverage mobile connectivity via ubiquitous voice and text messaging technologies which, when combined with narrowcast networks (The Fourth Screen), can deliver on the promise of interactive location-based services.

Mobile-enabled location-based services are likely to create significant opportunities for brands and businesses, especially in situations where the offering is relevant, timely and perhaps above all, trusted.

The Fourth Screen is emerging as a source of information when consumers are away from the home. With mobile-enabled technology, out-of-home networks are one step closer to meeting the demands of businesses and satisfying consumers’ need for information “right here, right now.”

About the authors

Bill Collins is principal of DecisionPoint Media Insights, a marketing and market research consultancy that develops go-to-market strategies for media companies, agencies and technology vendors in the out-of-home digital media field. He can be contacted at: BCollins1@cinci.rr.com.

Stephen Randall is chief executive of Boston based LocaModa Inc., a technology company dedicated to improving the user experience and brand effectiveness of out-of-home digital media. Prior to LocaModa, Stephen was a founder and EVP of Symbian, the market leading mobile phone operating system provider. He was a founder and Joint President of Psion Software the licensing arm of handheld computing company Psion PLC, and founder of Stepp Limited, inventors of the world’s first digital guitar. He can be contacted at: srandall@locamoda.com

NOTE: This document may be shared and re-printed. Excerpts may only be reproduced with proper attribution to *The disruptive effect of the Internet and mobile phones on out-of-home digital media* by Bill Collins and Stephen Randall.