

Creating Immersive In-Store Experiences with Directional Audio

Combining directional audio with digital signage offers an entirely new dimension to customer engagement.

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Technology long has been used in retail environments to increase customer engagement. It's rare to visit a shopping center or big-box store these days and not see a plethora of digital signage touting a variety of product messaging.

Retailers often use "virtual reality" experiences such as interactive video walls in flagship locations as well as self-service kiosks, tablets and other advanced technology to attract customers and showcase their products.

One feature that has been missing, though, is a way to have that messaging heard as well as seen.

"Without sounds, visual perception is different: less contrasting, less attention-demanding, and less informative," said architecture professor Joy Monice Malnar and fine-arts professor Frank Vodvarka in their book "Sensory Design."

Although background messaging played over a store's sound system has been used to add audio to retailers' branding efforts, such messaging generally is confined to the most basic information and usually is limited to a single message played throughout the entire store.

Now, new technological developments are enabling retailers to take the next step, enabling them to deliver targeted messages confined to a discrete area and allowing them to deliver multiple audio messages throughout the retail environment. That technology is directional audio.

Defining directional audio

Imagine walking past a soft-drink machine and being greeted by the sound of clinking ice cubes and fizzing soda being poured into a glass. Step away and the sound disappears. Picture standing in an electronics store listening to a description of the features of a laptop computer, while a nearby person listens to a description of a completely different product. Or envision sitting on a couch listening to Beethoven while the person sitting next to you



Directional audio speakers beam promotional audio content at a bank.



Sales of two well-known beverage products rose nearly 60 percent during an advertising campaign incorporating directional audio.

listens to John Coltrane. And to clarify, nobody in any of those scenarios is wearing headphones.

That's directional audio.

In familiar audio applications, standard loudspeakers, such as the ones typically used in a retailer's overhead sound system, create sound waves via a vibrating speaker cone. Not only do the sound waves spread out the farther away they are from the speaker, those waves are reflected off surrounding objects.

As a result, it's nearly impossible to locate multiple sources of audio content close to one another without having the sound from one speaker overlap the sound from another, creating an unintelligible mess.

Although several schemes for producing directed audio have varying degrees of success, Turtle Beach's HyperSound technology uses ultrasound instead of a vibrating speaker cone, generating audio in the air itself. The technology emits sound along a controlled, narrow path, so listeners can hear the sound only if they are "in the beam."

For comparison, traditional audio is similar to a bare light bulb radiating in all directions, while HyperSound technology is similar to a laser, producing sound at an infinite number of points along the beam.

Directional audio in retail

Audio clearly has a significant role to play in a retail environment. A 2007 study published in the European Journal of Scientific Research Journal found that playing music in a retail setting resulted in customers staying longer and spending slightly more than when no music was played.



A Build-a-Bear Workshop using directional audio speakers to enhance its interactive workstations.

In addition, a 1999 study by professors at the University of Leicester in the U.K. found that when alternating the type of music played in a supermarket's wine section the sale of French wine would increase when French music was played while the sale of German wine would increase when German music was played.

So if simply playing random music in the background can result in increased dwell time and higher sales, it stands to reason that targeted use of directional audio can lead to even more significant results.

Although the use of directional audio in a retail setting is still in its relative infancy, several academic research studies already show its potential. One of those, a 2012 study conducted by professors at the University of Stockholm, sought to determine whether the use of directional audio could result in consumers choosing organic products over non-organic ones. When standing in the store's dairy section, shoppers heard the sound of farm animals while a female narrator talked about the various benefits of organic products.

The study found that shoppers exposed to directional audio stayed in the dairy section 15 seconds longer than those not exposed to directional audio (55.5 seconds versus 40.5 seconds), and sales of the products touted by directional audio rose nearly 10 percent compared with sales of those same products prior to installation of the system.

Another 2012 study, one conducted at Swedish retailer ICA, came to even more dramatic conclusions. That study found that sales of two well-known beverage products rose nearly 60 percent during an advertising campaign incorporating directional audio.

In addition, the study found that directional audio achieved greater results in larger stores, as shoppers in those stores were more likely to make impulse purchases, and that the greatest sales increases were achieved when the audio content matched the product being promoted. Audio content that did not match the product being marketed did not result in a significant difference in sales.

By using directional audio retailers can create an immersive 3D sound environment confined to a specific area, such as in front of a target display or self-order kiosk. Those outside of the zone don't hear the sound, and for the shopper the experience is similar to wearing headphones, except they aren't wearing headphones.

As soon as they enter the zone shoppers are bathed in an unexpected, exciting audio experience that compels them to linger, increasing dwell time for the target application. The memorable experience delivered via direc-



Key Advantages of HyperSound in Retail

- Immersive, engaging experience
- Increased dwell time
- Increased advertising effectiveness
- Targeted audio advertising
- Multiple audio zones

Source: Turtle Beach Corp.

tional audio adds a “wow” factor that increases the effectiveness of advertising messages, ultimately leading to increased sales.

Retailers can create multiple zones of directional audio throughout a store, targeting specific zones to specific products. So rather than have a generic audio solution that delivers modest results, they can target their audio efforts on the products that best match their sales needs.

Build-A-Bear Workshop, for example, deployed Turtle Beach’s HyperSound directional audio technology in 38 retail stores across the United States in 2013. HyperSound allows Build-A-Bear to simultaneously operate multiple interactive kiosks within the store, each playing its own specific audio message.

In addition, Microsoft Corp. is showcasing HyperSound in its Microsoft Experience Center in Seattle. The Microsoft Experience Center provides business professionals a facilitated hands-on environment to test drive Microsoft devices and services through a series of simulated, every day scenarios.

“The ability to target audio directly to guests in front of our product kiosks provides an immersive experience that has been very popular at the Microsoft Experience Center,” said Marty Ramos, CTO, Retail, Consumer Products & Services at Microsoft. “HyperSound’s innovative virtual reality audio is a tremendous value-add for retailers wanting to create a personal sound environment on the sales floor.”

Where does it go from here?

In the near term, directional audio offers the ability for retailers to create virtual reality audio zones around kiosks or digital displays, providing supplemental audio content for those displays without disturbing people in other zones.

“HyperSound’s highly directional audio gives systems integrators the ability to add audio to visual displays without sound bleed, which is crucial, especially in acoustically challenging environments,” said Todd Savitt, vice president of HyperSound sales and marketing at Turtle Beach Corp.

A shopper looking for summer swimwear might be treated to the sound of children playing in a pool, while a budding athlete shopping for football equipment might hear the sounds of a touchdown play. In addition, a store in a shopping mall could play messaging touting the latest promotions, with that messaging heard only by those passing in front of that store.

Outside of a retail environment, directional audio might be used in a museum to offer audio commentary about a particular exhibit without interfering with the enjoyment of other nearby exhibits. At a trade show, a vendor could play

About the sponsor:

Turtle Beach Corp. is an audio technology company that markets innovative products under the Turtle Beach and HyperSound brands. The company's mission is to use innovative technology to create exceptional audio experiences across a wide range of consumer and business applications.

HyperSound is an innovation in audio that uses a thin film to generate an ultrasonic beam of sound. Like a flashlight controls a ray of light, HyperSound directs sound in a narrow beam limiting it to a specific location, creating a precise audio zone.

an audio track to accompany a digital display touting a new product, while the vendor in the next booth does the exact same thing with its own product.

And in a restaurant, a server could “sell the sizzle” as diners hear the sizzle of steaks on the grill, without disturbing the vegetarians at the next table. In the long term, the potential for directional audio is limited only by a marketer’s imagination.