

Logitech  
Innovation Brief

## RightSound™ Technology

Logitech® QuickCam® Webcams



With the recent advancements in live voice and video communications over the Internet, people can now see and talk to each other for free using a PC and a webcam. Logitech, the world's leading manufacturer of webcams, is making the experience of live video calling even better with the introduction of RightSound™ technology. Featuring acoustic echo cancellation software, Logitech® RightSound technology is now available with some of the company's new QuickCam® webcams.

### The Problem: Echo and Feedback

Using a microphone near a speaker in an audio system creates a technical challenge, whether it's with a concert audio soundstage, a speakerphone, or a computer system. Many webcams include an integrated microphone. However, because of the microphone's sensitivity and close proximity to computer speakers, people using live video calling applications commonly experience an echo that is disruptive to a conversation. Because of the echo, using a webcam with a live video calling application required wearing a headset - until now.



### The Solution: Logitech RightSound Technology

With Logitech RightSound technology, people can communicate freely without a headset - a more natural way of interacting - just as if they were in the same room with a friend or family member. RightSound technology allows the whole family to join the conversation without having to pass a headset from person to person.

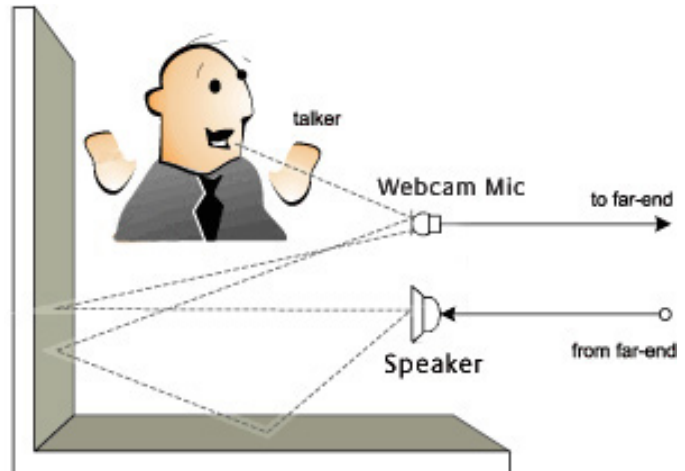
Logitech RightSound technology, part of Logitech's webcam software drivers, recognizes and eliminates repeated sound waves before they are reproduced as feedback or echo. The RightSound acoustic echo cancellation (AEC) algorithm analyzes sound waves and identifies those repeated within 128 milliseconds of one another, then filters the redundant sound. In that timeframe, sound is capable of traveling approximately 40 meters; an echo caused by a wall as far as 20 meters away (as sound travels to and from the wall) will be reduced.

### Reducing Feedback and Echo

To illustrate how RightSound Technology eliminates echo, here is a fairly common scenario:

- Participating in a video call, two people are using webcams with integrated microphones and typical computer speakers. Person A begins to speak; his voice signal is captured by his microphone and transmitted through Person B's speaker.
  - Without RightSound: Person B's microphone then picks up the voice signal directly from the speaker or as it bounces off a nearby wall, and transmits it back to Person A, who hears himself. The echo may be magnified as the original voice signal continues to cycle back and forth.

- With RightSound: Person B's system with Logitech's RightSound technology identifies the sound wave featuring Person A's voice as it is transmitted through the speakers. When the microphone picks up the speaker sound, the software filters the repeated wave, preventing it from being sent back to Person A. Thus, Person A will not hear any echo.



#### Full-Duplex Audio for Natural Two-Way Conversations

One of the strengths of Logitech's acoustic echo cancellation technology is that both parties in a video call can be speaking and interacting simultaneously. This ability to continuously transmit sound in two directions is called full-duplex audio. Many speakerphones on the market cancel echo simply by muting one person's microphone while the other is speaking. This often results in frustrating, broken, and unnatural conversations - similar to the experience of talking on a walkie-talkie.

#### Audio Flexibility

Logitech is continuing to deliver technologies that create the best possible experience in the widest variety of settings for people communicating over the Internet. By alleviating the need to wear a headset, Logitech RightSound technology gives people more freedom in how and where they use their webcams - whether it's the entire family crowding around a computer to deliver a remote birthday greeting, a mother showing off her newborn, or friends reconnecting while away at college. Even for private conversations with a headset, RightSound technology eliminates even slight echo, helping people experience clear, high-quality live audio communications while they use their webcams.