



## PRODUCT REVIEW

# Clean up background noise with Clarity CVC

There is little debate that background noise undermines the usefulness of current speech recognition systems in the automotive environment. But speech interfaces are here to stay. Business partnerships with OEM's and first tier players are fostering a vision of the consumer using hands free voice activated systems.

"We are migrating from talking on a land line in our homes to a wireless phone in our cars to a hands free environment" says Raymond Gunn, CEO of Clarity (Troy, Michigan). "The noise issue is a significant barrier to consumer uptake of telematics voice systems". Gunn believes that none of the speech recognition developers nor the microphone companies to date have successfully dealt with the noise issue in a cost effective manner.

problem is limited vocabulary and the lack of a standard set of commands between different speech recognition systems. Gunn takes a very sober view of the notion of consumers speaking comfortably with their telematic voice interfaces. He believes that navigation and GPS systems are exciting, but have yet to traverse the learning curve necessary for humans to feel at ease changing their habits overnight.

Gunn: "It comes down to simplicity. Let's deliver something that people really want to use. What do they want? I mean, am I going to get in my car, drive down and talk to a machine in natural language? That's not a practical expectation. Let's give people something that makes people productive in their cars, that allows them to use something they are accustomed to using, like their cell phone".

rently pre-optimizing the technology for a range of devices including hands free kits, camcorders, medical devices, cell phones and PDA's.

The biggest drawback for users of the technology is one-way noise. The quiet environment listener enjoys 'clear listening' while the noisy environment has to cope with 'noisy listening' since containing the source of the noise in their environment is difficult.

### What Clarity means for Telematics voice interface design

By addressing the background noise issue, Clarity offers speech recognition systems more flexibility to expand vocabulary size. Gunn sees an evolution of hands free interfaces toward natural language in the distant future. He regards limited vocabulary, expanded vocabu-

## The Dolby of speech systems?

As the speech interface penetrates the telematics automotive environment, 3rd party “enabler” companies such as Clarity know what to do with background noise -- eradicate it from the conversation entirely.

Less like a Dolby speaker, Clarity’s Clear Voice Capture (CVC) technology acts more like a strong bleach wiping away any detectable trace of background noise. The net result is a “sanitized” conversation where the listener is rescued from unwanted noise interference.

## How does it work?

Clarity improves sound quality in speech recognition systems or any microphone equipped device by reducing background noises, optimizing existing silence detection, canceling out echo and eliminating feedback interference. Clarity’s proprietary CVC software solution makes cheap microphones work like expensive microphones. According to Gunn, microphones up to very recently were designed for non-mobile environments and do a poor job of accommodating the demanding noise intensive spaces we inhabit today including in-car cell phone usage.

Gunn’s perspective aligns with the realities of human machine interaction. In a recent study by Ducker Worldwide, 60% of users had not activated their navigation systems. Cost is probably one factor but Gunn’s insight points to the underlying cognitive price the user has to pay: frustration, confusion, disorientation and lack of familiarity with interacting with a machine under stress conditions.

However, consumers will continue for the short term to use their mobile phones with some 70% of airtime used in transit, and this is where Clarity is realistically positioned to improve the quality of voice transmission.

## Key benefits

Clarity’s CVC offers a highly cost effective solution to background noise cancellation and microphone enhancement. The technology offers a noticeable difference in reducing unwanted noise. The software also improves battery life for hand-held phones by up to 20%.

Devices that already have a single microphone can be CVC “enabled” seamlessly. The dual microphone premium solution even offers the ability to filter out passenger conversation for improved coherency of speech processing.

lary, and tactile-voice overlays as all interim steps to accommodating the complexity surrounding direct natural language interaction. In the meantime, Clarity provides the opportunity to comfort the user with more clear conversation between others and the speech recognition engine. And major microphone and speech players are listening to Clarity. Already, Comworxx, ComRoad, Zandiant Technologies and partners Texas Instruments, WindRiver and General Electric are benefiting from CVC. Clarity’s latest contracts include Japan’s mega microphone producer Hosiden, Sony and Germany’s hands free car kit manufacturer Peiker Acustic.

“Unless you have a good voice quality input, telematics is not going to take off the way it should. You have to have a good voice user interface, you have to be able to eliminate background noise” says Gunn.

Clarity provides novel proprietary software products that improves voice intelligibility and significantly increase speech recognition rates in noisy environments. Clarity’s “Clear Voice Capture™” (“CVC™”) software extracts the voice signal of interest while suppressing all types of unwanted noise. Visit Clarity at [www.clarityco.com](http://www.clarityco.com). 📞

### Will CVC revolutionize the use of speech interfaces?

Speech recognition systems suffer from numerous problems one of which is noise. Another

### Drawbacks

The technology is currently not “plug and play” and requires software optimization for each application it goes into. However, Clarity is cur-

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