Initiating the Surround Sound Era for Digital Radio

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Telos/Omnia and Fraunhofer IIS announce the first public demonstration of their new surround system for HD Radio™ at the NAB Radio Show in San Diego, October 6-8.

At NAB Radio Show, Telos/Omnia and Fraunhofer IIS present a novel surround system for HD Radio™ **delivering impressive full surround audio without compromising the stereo signal in any way**. This way, both users equipped with conventional stereo receivers and those owning surround receivers will get the maximum audio pleasure while listening to the same radio program.

HD Radio, the new digital radio broadcast standard for the USA, works in the traditional FM and AM channels to deliver high quality digital audio to listeners.
About 100 radio stations are already on-air using HD Radio technology, with many more planning to begin HD Radio broadcast. Several digital receivers capable of HD Radio reception are available to consumers.

Omnia's President, Frank Foti says, "Surround using this approach and transmitted digitally over HD Radio is a true gain in audio excellence."

The key to the system is that all the pieces of audio that go to the surround channels are present in the two stereo channels. Additionally, there is an ancillary data channel used for transmitting spatial information. The surround decoder, if present in the receiver, uses this information to move the pieces of audio to their respective positions,

recreating the original multi-channel sound. In the system presented, 80 kbit/s are used for the stereo channels and
16 kbit/s for the surround information.

The system is based on work by Fraunhofer IIS and Agere Systems in the area of "binaural cue coding". Three essential factors are required for the perception of a spatial audio image: level difference, time difference and coherence between channels. These values are represented as a function of frequency and time with very compact coding and allow for a huge data saving compared to transmitting all audio channels individually.

Harald Popp, head of the Fraunhofer IIS Multimedia Realtime Systems Department notes, "Having invented MP3 we see surround as the next major audio enhancement. The sound is exquisite in the lab and will be as striking on air."

Telos CEO Steve Church comments, "Radio station owners paid for an old-fashioned FM stereo license, but with this technology they could have a state-of-the-art digital surround license for no additional cost."

The surround technology can work with any core stereo codec. Fraunhofer IIS has already presented it as an enhancement to MP3 and MPEG-4 HE-AAC, and work is underway to marry it with other codecs.

Source: Fraunhofer Institut für Integrierte Schaltungen (IIS)